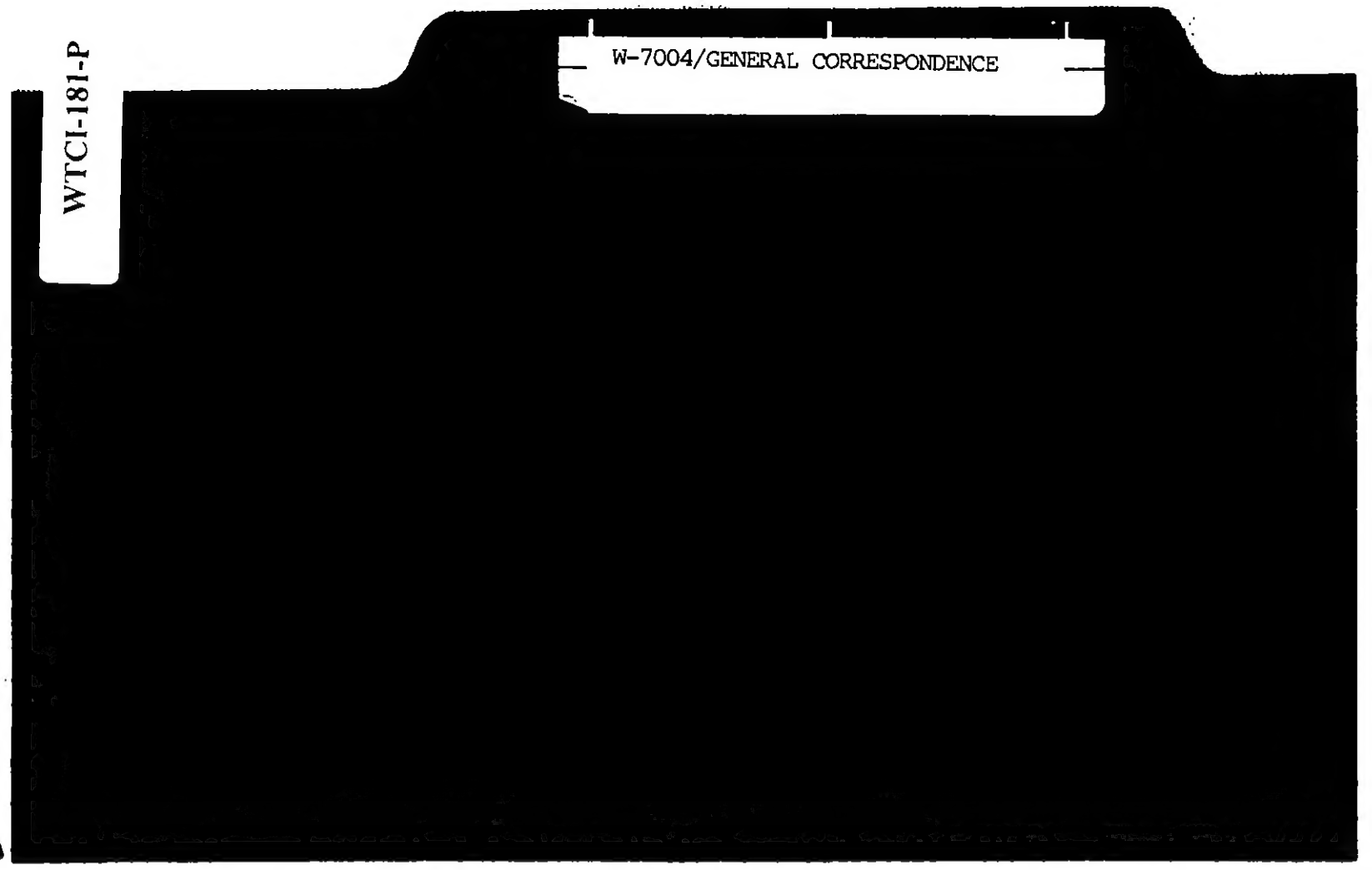
W2-405-083-550.438

REVIEW STATUS

W-7004(c)

Sub-mission#	Response To #	Coordinator	TCRU Memo	Approval	Facility Rider	Outstanding Comments	Remarks
1 (10-11-88)	—	AR	10-17-88	10-17-88		-0-	BLDG SERVICES (EC, HVAC, PL & F.D) DEMOLITION FOR TRADI: FLOORS 38, 40 & 42;
2 (10.18.88)	—	JPV	11-2-88	—		23c.	Base Bldg. modifications, + egress, incl. 2nd Flr. Audito
Meeting	2	VAD Paul C	11.2.88	—	—	—	Do
3 (11.9.88)		JPV	12-5-88	—	One Memo	27	All trades } proposed wo Mech + Electr
4 (11.15.88)	2			—			Response } still concept
2S (—)	—	PSC	11.28.88	*11.2888			* Approval for structure demolition ONLY.
5 (11.22.88)		JPV	12-20-88	—		24	. Struct. final . Other trades incomplete
6 (12.23.88) (1.5.89) (2.9.89)	3 & 4	JPV	2-13-89			21/6	. All trades (incomplete. . Base Bldg. Modification
Meeting	3+4	JPV	2.10.89	—			. Meeting on all trades on TCRU memos of 11.2.88 + 12.5.8
7 (2.21.89	3, 4, 5+6	JPV	3-13-89	—		63	. Base Bldg. All trades
Meetings	3, 5, 6 7	TCRU	3.16.89 3.21.89		TCRU/WT → 3.22.89		. Working meetings w/consull
8 (3.14.89)	6	JPV	3-24-89	—		9	. Base Bldg with more details
9 (3.21.89	7 STR						. Str. response
0 (4-10.89)	3.22.89	JPV	4-24-89	*4.24.89		18	BASE BUILDING SYSTEM — *HVAC NOT APPROVED
—	4-24-89	MEETING					


W-7004/GENERAL CORRESPONDENCE
WTCI-181-P

Member of the New York Stock Exchange, Inc.

One New York Plaza
New York, N.Y. 10004 (212) 747-7000

Salomon Brothers Inc

2-5-90
P. COOPER/
V. DOVLETIAN:
PLEASE ADVISE IF
YOU HAVE ANY
COMMENTS
THANKS
Rick

February 5, 1990

Mr. Rick E. Wegel
Senior Project Engineer
Port Authority of New York and New Jersey
One World Trade Center - Suite 74S
New York, NY 10048

CC: L. MENNO
E. McMERNEY

Re: 7 WTC - Code Issues

Dear Rick:

At our meeting on December 8, 1989 at your offices, we discussed several design issues where an interpretation of the code was required.

The result of our meeting was that the P.A. Engineering Department would accept the conditions as designed pending confirmation of the engineer of record (in our case, Flack & Kurtz).

The attached letter from Flack & Kurtz confirms their acceptance of the three conditions in question:

- Core receptacle height
- Raised floor adjacent to pad-mounted transformers
- Grounding transformer neutral to building steel

Thank you for your assistance in this matter.

Sincerely,

J Glass

Jack Glass
Project Manager

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
FEB 07 1990
NOTED RRC 15Feb90
REFERRED TO Job Fold.
W-7004

att.

cc: B. Reinholtz
W. Mathison
J. Beech
D. Cooper
R. White
M. Fernandez/File (7-8800-02.000.20, 005.2)
E. Schneider

Atlanta/Boston/Chicago/Dallas/Los Angeles/San Francisco/Affiliates Frankfurt/Hong Kong/London/Sydney/Tokyo

Flack + Kurtz
Consulting Engineers

475 Fifth Avenue
New York, NY 10017
212 532-9600

Chicago
Los Angeles
San Francisco

P/S. forward to P.A. Thx. MF

RECEIVED
JAN 23 1990
FACILITIES MGMT.

J. Glass
cc - R. White
File 7 WTC (PA approvals Elec

January 19, 1990

Mr. Manuel Fernandez
Salomon Brothers, Inc.
7 World Trade Center
New York, New York 10048

Re: SBI @ 7 WTC - Port Authority Acceptance of Code Variations
F+K Reference No. 88.22440.00

Dear Manuel:

In the past several months SBI has approached the Port Authority for rulings on several code issues for variances and interpretations as summarized below.

1. SBI asked if existing receptacles in the core area need to be raised due to the installation of raised flooring and the requirements of Local Law #58. The P.A. responded that they would accept leaving the outlets if it was acceptable to the engineer. As F+K's concern was solely Port Authority acceptance of the condtion, F+K does not object to leaving the existing outlets in place.

2. SBI asked if the existing floor-mounted transformers need to be relocated due to the installation of raised flooring in the electrical closets which limit the Code-required access to the transformers. The P.A. responded that they would accept not relocating the transformers providing the raised floor stops approximately six inches from the transformer case to allow for ventilation. F+K will therefore accept this installation.

3. SBI asked the P.A. to confirm the Code requirement for a separate ground connection from the transformer neutral to building steel. Upon the P.A.'s inspection of the expedited cooling plant, they requested such a ground. Coyne Electric has installed the required

ground on the transformers for expedited power and cooling.

Very truly yours,

FLACK + KURTZ Consulting Engineers

Drew Daniels, P.E.
Associate

DD/rm

cc: E. Schneider - SBI
J. Glass - SBI
W. Mathison - SOM
B. Reinholtz - M/D
J. Beech - F+K
D. Cooper - F+K
R. Levine - F+K

B U C K S L I P

FILE

To: Anthony P. Vaccaro
From: Paul S. Cooper
Date August 18, 1989
Subject: **7 WTC - TEMPORARY AIR SUPPLY TO FLOORS 24 & 25**

Copy To: P. Cavanagh, V. Dovletian, M. Glavicic, L. Menno. T. O'Connor, E. Ramabhushanam, L. Sanchez, Z. Zwierz, Job Folder (W-7004)

We have no problem with the temporary air supply for the 24th and 25th floors in 7 WTC, as outlined in Neil Lynch's August 9, 1989 letter to you, and as proposed by Flack & Kurtz in their July 20, 1989 letter to Jack Glass of Salomon Brothers, Inc.

However, the design for the temporary installation should be incorporated, in detail, into the appropriate contract documents, and submitted for Engineering's review prior to construction.

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
JAN 08 1990
NOTED PRC 11 Jan 90
REFERRED TO Job Fold
(W-7004)

MEMORANDUM

TO: Paul Cooper
FROM: Rick Wegel
DATE: January 5, 1990
SUBJECT: MEETING HELD ON DECEMBER 8, 1990 REGARDING WT-7 - SALOMON - DESIGN ISSUES

REF: Letter dated December 18, 1989 to R. Wegel from J. Glass

COPY TO: P. Cavanagh, V. Dovletian, L. Menno, E. McNierney

Please advise if you concur with the interpretation of the three (3) issues addressed in the above referenced letter.

Thanks,

Edward McNierney

for Rick Wegel
Senior Project Engineer

Attachment

RW/sm

see next page

Member of the New York Stock Exchange, Inc.

One New York Plaza
New York, N.Y. 10004 (212) 747-7000

Salomon Brothers Inc

December 18, 1989

Mr. Rick E. Wegel
Senior Project Engineer
The Port Authority of NY & NJ
One World Trade Center, Suite 74S
New York, NY 10048

Re: 7 WTC - Design Issues

Dear Rick:

At our meeting on 12/8/89 at your offices, we discussed several design issues related to the construction of the Salomon offices at 7 WTC. This letter confirms the agreements reached with Paul Cooper, Varouj Dovletian, Ed McNierney and yourself.

1) Raised floor extended into the electrical closets will be permitted around transformers, provided a space of approximately 6-inches is maintained between the transformer and the edge of the floor.

2) The fuel oil piping will be permitted in a fire-rated shaft with other utilities provided there is separation between the pipe and the utilities within the shaft. It was stated that the outer wall of the double-walled pipe would provide sufficient separation; however, in subsequent discussions, Varouj confirmed that the separation must be 2-hour fire-rated construction. This is consistent with the notes on the current design documents.

3) Fire sprinkler design for the Salomon side of the glass wall in the Silverstein lobby will be acceptable only if it equals the density of the water-curtain design existing on the lobby side of the glass.

Please return an acknowledgement of these agreements at your earliest convenience.

Sincerely,

Jack Glass
Project Manager

cc: R. White
M. Fernandez/File (7-8800-02.000.20)
J. Beech
D. Cooper
W. Mathison
D. Sullivan
B. Reinholtz

249

March 28, 1989

THE PORT AUTHORITY OF N.Y. & N.J.
ENGINEERING DEPT., QUALITY ASSURANCE DIV.
TENANT CONSTRUCTION REVIEW UNIT
APR 05 1989
RECEIVED
NOTED: PJC 4/6/89
REFERRED TO: JOE FOLEY
W-9004

Mr. George Mauraides
P.E. for Cranes and Derricks
New York City Department of Buildings
Room 1429
60 Hudson Street
New York, New York 10013

Re: Seven World Trade Center -
Installation of Derricks and Crane on the Roof

Dear Mr. Mauraides:

Progress at the Seven World Trade Center site requires the installation of derricks and a crane. Morse-Diesel, Construction Manager for Salomon Brothers, a major tenant, is planning to install two Clyde Whirlette derricks and a large capacity crane on the roof of Seven World Trade Center. The Clyde Whirlettes are to be used to lift structural members onto their respective floors and the large crane to the roof. The large capacity crane is to be used for lifting the refrigeration machines, cooling towers, air handling units, switchgear, penthouse dunnage, etc. onto the roof.

Since the building has been constructed on Port Authority property, this letter permits Morse-Diesel to contact the Professional Engineer for Cranes and Derricks, as required for inspecting the above derricks and crane and their installation.

If any additional information is required from your Department with respect to this release, please advise.

Sincerely,

Robert A. Linn
Deputy Director for
Physical Facilities
World Trade & Economic Development

cc: B. Reinholtz, S. Orr (Morse Diesel), M. Smith (Silverstein),
E. Schneider (Solomon Brothers)

bcc: P. Cavanagh, R. Lachman, A. Vaccaro, V. Vaccariello, P. Cooper

M E M O R A N D U M

To: Mr. R. Linn, Deputy Director for Physical Facilities, WT&ED
From: Ennala Ramabhushanam
Date: April 12, 1989
Subject: WTC - ALTERATION APPLICATION #W-7004 - SALOMON BROTHERS - 7 WTC - TELECOMMUNICATIONS CABLING INSULATION SPECIFICATIONS

Reference:
1) Buckslip, R. Linn to P. Cooper and T. Bell , dated 4/4/89
2) Letter, R. Sumski (Electronic Systems Associates) to M. Fernandez (Salomon Brothers), dated 3/17/89
3) Memorandum, A. Coras to R. Linn, dated 2/13/89
4) Letter, R. Linn to M. Fernandez, dated 1/31/89

Copy To: T. Bell, P. Cooper, E. Daly, V. Dovletian, M. Poliacof, A. Rohssler, L. Sanchez, A. Vaccaro, D. Wolf

This is in response to your buckslip, Reference #1, concerning points raised by the tenant's consultant in Reference #2 on requirements for telecommunications cabling insulation.

Comment #15 of our memorandum, Reference #3, responded to the material submitted for review, and restated the general case, which is: that cable insulation appropriate to the location is required. Thus, a UL-listed plenum cable would be required if run outside of metal raceways in an air-handling space; see NEC Section 800-3(b).

The tenant's consultant alludes to usage in computer rooms in Reference #2. The consultant would be correct in running communications cables, of any type, through an air-handling space, only if all the following conditions were met:

1) The space must be in a computer room, designed in compliance with NFPA 75.

2) The air-handling space must be under a raised floor.

3) Manual disconnecting means for the air-handling system and the electric power to the computer room must be provided at the computer room exits and at locations readily accessible to the operator.

4) The raised floor installation must be protected with an automatic fire detection and fire extinguishing system such as CO_2 or Halon.

See N.Y.C. Electrical Code Bulletin No. 126-Revised 1983, part 126.6-b, and NEC Section 645-1.

We note that the specifications submitted for review did not limit the cable usage to computer rooms, and that neither the specifications nor the drawings indicated the design work necessary to fulfill the Code requirements stated above.

Our recommendation is that the tenant's consultant be directed to revise the specifications and drawings so as to distinguish the cables used in computer rooms from those used in other areas, and so as to comply with the Code requirements we have stated above.

Ennala Ramabhushanam, P.E.
Manager
Quality Assurance Division

AR/PSC/MP/dm

BUCKSLIP

TO: P. Cooper, T. Bell
FROM: Robert J. Linn
DATE: April 4, 1989
SUBJ: **7 WTC - SALOMON BROTHERS - TELECOMMUNICATIONS CABLING INSULATION SPECIFICATIONS**

COPY TO: E. Daly, L. Sanchez, A. Vaccaro, D. Wolf

Attached is a copy of an April 3rd letter, Fernandez/Linn, outlining their counter claims concerning the specifications for telecommunications wiring in "Air Circulation Spaces (Plenums)". I would appreciate your immediate comments concerning this so that I can report to Mr. Fernandez as soon as possible.

R. J. L.

Att.

Electronic Systems Associates

Ronald D. Sumski
Group Vice President

MAR 2 7 1989
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FACILITIES MGMT.

March 17, 1989

Mr. Manuel Fernandez
Vice President
Salomon Brothers Inc.
One New York Plaza
New York, New York 10004

Dear Manuel:

Following is our response to Robert Linn's letter of January 31, 1989 concerning UL classification CMP, OFCP or OFNP for communications cables, traversing environmental air spaces, not encased in noncombustible tubing. Mr. Linn, in his letter, makes reference to the forthcoming comments on our December 19th submission. In the comments the Port Authority requested that we remove the reference to areas having no fire suppression system.

Since the Port Authority requires our compliance with the New York City Building Code and National Electric Code, we see no need to remove our reference to communications cables being non-plenum rated passing through air circulation spaces in computer rooms if those spaces are protected by a fire suppression system. To summarize:

A. If communications cables pass through an air circulation space, those cables will either be in conduit or have a UL approved plenum rated jacket.

B. If communications cables pass through an air handling space that is protected by a fire suppression system there is no code requirement for conduit or plenum rated cable jacketing.

C. The specific references are:

   1. City of New York Electric Code. Bulletin No. 126 Article 126.6 (cables in computer rooms.)

I trust that the letter will satisfy the Port of Authority concern while preserving a Salomon Brothers Option.

If there are any questions, please call.

Very truly yours,

ELECTRONIC SYSTEMS ASSOCIATES

Ronald D. Sumski
Group Vice President

RDS:jm
0595J

cc: Plaza Technology Center Inc.
Mr. Anthony DeMeo

Skidmore Owings & Merrill
Mr. Warren Mathison

THE PORT AUTHORITY OF NEW YORK & NEW JERSEY

M E M O R A N D U M

To: Mr. R. Linn, Deputy Director for Physical Facilities, WT&ED
From: Arthur P. Coras
Date: February 13, 1989
Subject: WTC - ALTERATION APPLICATION #W-7004 - SALOMON BROTHERS - 7 WTC - BASE BUILDING MODIFICATIONS

Reference: Tenant Alteration Review Requests, dated 12/23/88, 1/5/89, and 2/9/89

Copy To: L. Sanchez A. Vaccaro Job Folder
Chrono Folder

A review of the material submitted with the referenced request for the subject application has been made.

It is recommended that approval to proceed be withheld pending submission of the items indicated below being revised in accordance with the twenty-seven (27) requirements listed on the attached rider.

Arthur P. Coras, P.E.
Manager
Quality Assurance Division

JPV/dm
att.

RIDER

ALTERATION APPLICATION #V-7004

ARCHITECTURAL

1. Dwg. #A-2, Second Floor Plan, Auditorium. The basic plan shown shall be supplemented by a complete plan showing the seating, aisles, steps, stage, etc. Also, show dimensions, clarify the access to the Elevator Machine Room, and the function and/or occupancy classification of spaces where not yet shown. (N.Y.C. Building Code Section C26-110.2).

2. Dwg. #A-2, Second Floor Plan. In order for the area north of the auditorium to be classified as a safe area, its clear width throughout shall be not less than eight (8) feet. Increase the width of the safe area legs at the auditorium doors to comply. (Code Section C26-801.11)(3))

3. Provide an updated egress analysis for the Second, Third and Fourth Floor reflecting the latest revisions at these floors, establishing occupant loads, exit capacities and travel distances. Revise the indicated capacity of the direct exit from the auditorium to the street to be not more than the capacity of the street level door minus the occupant load of the building stair also discharging through this door. See Code Articles 6 and 8.

4. Dwg. #A-3, Third Floor Plan.

   a) Identify the function and occupancy classification of spaces where missing. Also identify the intended use of the long closet along the side of the "Lounge".

   b) Clarify if the "Lounge" is still to be considered as part of the safe area at the Second Floor, in which case its serving a classroom, a staff room and a large locker room require to be justified.

   c) Clarify if the two (2) escalators at the north side are to be used also as exits from the floor above in which case their compliance with the requirements of Code Section C26-604.11 shall be substantiated.

5. Dwg. #A-3, Floor Plan. Identify the functions and occupancy classifications to be contained in the building area east of the main lobby, and the type and fire rating of its separation from the lobby. Note that this separation shall comply with the requirements of C26-720.0 (Atriums).

6. Dwg. #A-4, Fourth Floor Plan. Show the relative extent of the dining, serving and kitchen areas, and identify partitions, guardrails and other enclosures. At dining areas show the room layout. (Code Section C26-110.2)

7. Dwg. #A-48, Main Roof Plan.

   a) Clarify if new spaces have been added adjacent to the existing bulkhead and identify their functions.

   b) Verify and substantiate that the egress from the areas or spaces at this level comply with the requirements of Code Table 6-1.

8. Dwg. #A-262, Bulkhead Elevations. Substantiate that the guardrail is designed to comply with the structural requirements of Code Section 27-558. (C26-902.3)(b).

STRUCTURAL

Repeat 9. The report on ceiling anchor tests describes only one test on a Ladd clip. This is not enough to recommend approval. Please revise the ceiling support details. (Repeat comment)

Repeat 10. The design of the roof framing shall include the loads from the antennae shown on Dwg. No. 6-48.1.

Repeat 11. Verify that the concrete-encased cables shown on Dwg. #E-5 can be supported by the floor above.

ELECTRICAL

*12. Dwgs. #E-5, E-R2: Expanded electric service. Submit complete information on equipment dimensions, clearances, transformer vault wall materials, conductor sizes, overcurrent device settings, containment of spilled transformer fluid and generator fuel, and the boundary separating the area under exclusive control of Con Edison from that under customer control. N.Y.C. Electrical Code sections 27-3048 (B30-44.1), 27-3045 (B30-43.0), 27-3047 (B30-44.0), 27-3272 (B30-246.0), 27-3274 (B30-248.0), 27-3275 (B30-249.0), and Bulletin No. 102-1967 (Revised), and NEC Sections 110-16 and 110-33.

(Modified repeat comment).

13. Dwg. #E-R2. Justify tapping the 13.2KV feeders; clarify how overcurrent protection of the tap conductors is accomplished, and show the splice chamber on the plans. N.Y.C. Electrical Code sections 27-3093 (B30-82.0), 27-3292 (B30-266.0).

*14. Dwgs. #E-R1, E-R2. Submit short-circuit calculations and tabulation of short-circuit ratings for buses, fuses, switches, and circuit breakers, with corresponding values of short-circuit current. N.Y.C. Electrical Code sections 27-3047 (B30-44.0), 27-3048 (B30-44.1), 27-3067 (B30-59.0); NEC sections 110-9, 110-10. (Modified repeat comment)

15. ESA Voice and Data Cable Specifications, paragraph 2.a. Delete reference to areas having no fire suppression system, so that the referenced cables will be required whenever used outside of metallic raceway to traverse air circulation spaces. N.Y.C. Electrical Code Bulletin No. 126-Revised 1983, NEC Sections 770-6(c), 800-3(b)(3).

16. Flack & Kurtz Specifications, page 19, paragraph 7.c. Substitute non-PVC insulation for THW and THWN wiring.

MECHANICAL

17. Specifications section 14010, "General Conveying Systems Provisions." Add the N.Y.C. Electrical Code to the list of Reference Standards, part 1.02-B.

18. Code Analysis, re: response to comment numbers 8 through 21 of Quality Assurance Division memo dated 12/5/88. Submit revisions conforming with the response.

19. Code Analysis, re: response to comment number 22 of Quality Assurance Division memo dated 12/5/88. PVC wiring is prohibited indoors, even if run in conduit. (Modified repeat comment)

*20. Affix PE or RA seal and signature to all drawings. The "C" and "ELV' series of drawings have not been signed and sealed. N.Y.C. Building Code section 27-157 (C26-110.2). (Modified repeat comment)

MECHANICAL

*21. Submitted HVAC drawings provide only an outline of the design work for the base building HVAC system modifications and do not contain sufficient design information (dimensions, design details, materials, constructin methods, etc.) based on which such work can be revieved for conformance with the N.Y.C. Building Code. Same applies to submitted outline specifications which are not included in contract documents for mechanical work in this building. See Code Section C26-110.2). (Modified repeat comment).
Detailed review will be performed when above information is received.

22. Design Guidelines VIII, Minimum Standards for Construction in New York City, Engineering Requirements - HVAC:

a) Add the requirements for Smoke Control in conformance with Code Section C26-1300.8.

b) For "General Requirements and Constructions Requirements of Fuel Oil Storage Tanks" add requirements of the New York State Department of Environmental Conservation - GNYCRR: Part 612, Part 613 and Part 614.

c) Revise NFPA 90-A, 1967 to NFPA 90-A, 1981.

d) Revise NFPA 96, 1964 to NFPA 96, 1984.

e) Revise ANSI-B9.1, 1971 to ANSI-B9.1, 1978.

Consultant's response could not be verified as submitted for review materials, therefore, the comment is herein repeated.

23. Dwg. #HVAC-1. For the new 6500 gallon fuel oil tank and piping indicated on the drawing provide part plans, sections and/or elevations as well as specifications and design details as required to demonstrate conformance with all applicable provisions of Subchapter 14, Article 17 of the N.Y.C. Building Code and standards for new and substantially modified petroleum storage facilities, 6NYCRR, Part 614.

24. Dwgs. #HVAC-5 and HVAC-6. Since outside air intakes shown on these drawings are in proximity of the existing Con Edison Substation venting louvers, please provide HVAC contract documents with clear description of the provision undertaken in this design to prevent the introduction of the potential substation fire into the building. See N.Y.C. Building Code RS 13-1, Sections 2-3.4.3. and 3-3.6.

25. Where modified sheet metal duct risers cross over to other shaft locations on numerous floors in the building, they shall either be enclosed in 2-hour rated construction, (the same as required for shaft enclosures) or fire dampers and access doors shall be installed at the penetrations of all floor slabs and/or shaft walls in conformance with Code Section C26-504.6(c) and RS 13-1, Section 3-3. (Repeat comment)

26. Dwg. #HVAC-47. Provide part plans, sections and/or elevations as required to clarify the location, connection points and coordination with O.A. ducts for the new 64 x 48 smoke exhaust system duct section. See Code Section C26-110.2. Also provide in this duct the code required opening protectives at penetrations of all rated partitions in conformance with RS 13-1, Section 3-3. (Repeat comment)

27. Dwg. #HVAC-48. For new air handling units, provide and show on the plans the physical locations of duct mounted smoke detectors in conformance with RS 13-1, Section 4-3. The same requirement is applicable to the air handling units with capacities greater than 15,000 cfm. Show the protection against combustion of air filter systems in conformance with requirements of RS 13-1, Section 2-4.1.2.

THE PORT AUTHORITY

The World Trade Center
One World Trade Center
New York, New York 10048

January 31, 1989

To: FEB 06 1989
RECEIVED

Per your request Jan 25 1989

Mr. Manuel Fernandez
Salomon Brothers Inc.
One New York Plaza
New York, NY 10004

SUBJ: 7 WORLD TRADE - SALOMON BROTHERS - TELECOMMUNICATIONS CABLING SPECIFICATION

Ref: Letter: Fernandez (Salomon)/Linn, dated 1/25/89

Dear Manny:

Our Engineering staff has revieved the telecommunications cabling specification which was part of your December 19, 1988 submission and the only part that we ask you to modify is that dealing with Item 2. in the specification concerning "Air Circulation Spaces (Plenums)". It is requested that this Item a. be changed as follows:

Cables which are not encased in noncombustible tubing traversing environmental air circulation spaces (plenums) must meet or exceed UL classification CMP, OFCP, or OFNP.

This modification will be included in our forthcoming review comments of the overall December 19 submission. I hope that this information will enable you to proceed with an early purchase of your communications cabling.

Sincerely,

Robert J. Linn
Deputy Director for
Physical Facilities
World Trade & Economic Development

cc: L. Sanchez

cc - A. De Meo
M. Simone
R. Sumski
W. Mathison
D. Sullivan
J. Beech
D. Daniels
R. White
E. Schneider
File 7WTC/Tech-Elec

The World Trade Center
New York, NY

Permit Dec 19

M E M O R A N D U M

To: Mr. R. Linn, Deputy Director for Physical Facilities, WT&ED
From: Ennala Ramabhushanam
Date: April 12, 1989
Subject: WTC - ALTERATION APPLICATION #W-7004 - SALOMON BROTHERS - 7 WTC - TELECOMMUNICATIONS CABLING INSULATION SPECIFICATIONS

Reference:
1) Buckslip, R. Linn to P. Cooper and T. Bell , dated 4/4/89
2) Letter, R. Sumski (Electronic Systems Associates) to M. Fernandez (Salomon Brothers), dated 3/17/89
3) Memorandum, A. Coras to R. Linn, dated 2/13/89
4) Letter, R. Linn to M. Fernandez, dated 1/31/89

Copy To: T. Bell, P. Cooper, E. Daly, V. Dovletian, M. Poliacof, A. Rohssler, L. Sanchez, A. Vaccaro, D. Wolf

This is in response to your buckslip, Reference #1, concerning points raised by the tenant's consultant in Reference #2 on requirements for telecommunications cabling insulation.

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The tenant's consultant alludes to usage in computer rooms in Reference #2. The consultant would be correct in running communications cables, of any type, through an air-handling space, only if all the following conditions were met:

1) The space must be in a computer room, designed in compliance with NFPA 75.

2) The air-handling space must be under a raised floor.

3) Manual disconnecting means for the air-handling system and the electric power to the computer room must be provided at the computer room exits and at locations readily accessible to the operator.

4) The raised floor installation must be protected with an automatic fire detection and fire extinguishing system such as CO_2 or Halon.

See N.Y.C. Electrical Code Bulletin No. 126-Revised 1983, part 126.6-b, and NEC Section 645-1.

We note that the specifications submitted for review did not limit the cable usage to computer rooms, and that neither the specifications nor the drawings indicated the design work necessary to fulfill the Code requirements stated above.

Our recommendation is that the tenant's consultant be directed to revise the specifications and drawings so as to distinguish the cables used in computer rooms from those used in other areas, and so as to comply with the Code requirements we have stated above.

Ennala Ramabhushanam, P.E.
Manager
Quality Assurance Division

AR/PSC/MP/dm

BUCKSLIP

TO: P. Cooper, T. Bell
FROM: Robert J. Linn
DATE: April 4, 1989
SUBJ: 7 WTC - SALOMON BROTHERS - TELECOMMUNICATIONS CABLING INSULATION SPECIFICATIONS

COPY TO: E. Daly, L. Sanchez, A. Vaccaro, D. Wolf

Attached is a copy of an April 3rd letter, Fernandez/Linn, outlining their counter claims concerning the specifications for telecommunications wiring in "Air Circulation Spaces (Plenums)". I would appreciate your immediate comments concerning this so that I can report to Mr. Fernandez as soon as possible.

R. J. L.

Att.

Electronic Systems Associates

Ronald D. Sumeki
Group Vice President

MAR 7 1989
RECEIVED
FACILITIES MGMT.

March 17, 1989

Mr. Manuel Fernandez
Vice President
Salomon Brothers Inc.
One New York Plaza
New York, New York 10004

Dear Manuel:

Following is our response to Robert Linn's letter of January 31, 1989 concerning UL classification CMP, OFCP or OFNP for communications cables, traversing environmental air spaces, not encased in noncombustible tubing. Mr. Linn, in his letter, makes reference to the forthcoming comments on our December 19th submission. In the comments the Port Authority requested that we remove the reference to areas having no fire suppression system.

Since the Port Authority requires our compliance with the New York City Building Code and National Electric Code, we see no need to remove our reference to communications cables being non-plenum rated passing through air circulation spaces in computer rooms if those spaces are protected by a fire suppression system. To summarize:

A. If communications cables pass through an air circulation space, those cables will either be in conduit or have a UL approved plenum rated jacket.

B. If communications cables pass through an air handling space that is protected by a fire suppression system there is no code requirement for conduit or plenum rated cable jacketing.

C. The specific references are:

   1. City of New York Electric Code. Bulletin No. 126 Article 126.6 (cables in computer rooms.)

I trust that the letter will satisfy the Port of Authority concern while preserving a Salomon Brothers Option.

If there are any questions, please call.

Very truly yours,

ELECTRONIC SYSTEMS ASSOCIATES

Ronald D. Sumski
Group Vice President

RDS:jm
0595J

cc: Plaza Technology Center Inc.
Mr. Anthony DeMeo

Skidmore Owings & Merrill
Mr. Warren Mathison

THE PORT AUTHORITY OF NEW YORK & NEW JERSEY

M E M O R A N D U M

To: Mr. R. Linn, Deputy Director for Physical Facilities, WT&ED
From: Arthur P. Coras
Date: February 13, 1989
Subject: WTC - ALTERATION APPLICATION #W-7004 - SALOMON BROTHERS - 7 WTC - BASE BUILDING MODIFICATIONS

Reference: Tenant Alteration Review Requests, dated 12/23/88, 1/5/89, and 2/9/89

Copy To: L. Sanchez A. Vaccaro Job Folder
Chrono Folder

A review of the material submitted with the referenced request for the subject application has been made.

It is recommended that approval to proceed be withheld pending submission of the items indicated below being revised in accordance with the twenty-seven (27) requirements listed on the attached rider.

Arthur P. Coras, P.E.
Manager
Quality Assurance Division

JPV/dm
att.

RIDER

ALTERATION APPLICATION #W-7004

ARCHITECTURAL

1. Dwg. #A-2, Second Floor Plan, Auditorium. The basic plan shown shall be supplemented by a complete plan showing the seating, aisles, steps, stage, etc. Also, show dimensions, clarify the access to the Elevator Machine Room, and the function and/or occupancy classification of spaces where not yet shown. (N.Y.C. Building Code Section C26-110.2).

2. Dwg. #A-2, Second Floor Plan. In order for the area north of the auditorium to be classified as a safe area, its clear width throughout shall be not less than eight (8) feet. Increase the width of the safe area legs at the auditorium doors to comply. (Code Section C26-801.11)(3))

3. Provide an updated egress analysis for the Second, Third and Fourth Floor reflecting the latest revisions at these floors, establishing occupant loads, exit capacities and travel distances. Revise the indicated capacity of the direct exit from the auditorium to the street to be not more than the capacity of the street level door minus the occupant load of the building stair also discharging through this door. See Code Articles 6 and 8.

4. Dwg. #A-3, Third Floor Plan.

   a) Identify the function and occupancy classification of spaces where missing. Also identify the intended use of the long closet along the side of the "Lounge".

   b) Clarify if the "Lounge" is still to be considered as part of the safe area at the Second Floor, in which case its serving a classroom, a staff room and a large locker room require to be justified.

   c) Clarify if the two (2) escalators at the north side are to be used also as exits from the floor above in which case their compliance with the requirements of Code Section C26-604.11 shall be substantiated.

5. Dwg. #A-3, Floor Plan. Identify the functions and occupancy classifications to be contained in the building area east of the main lobby, and the type and fire rating of its separation from the lobby. Note that this separation shall comply with the requirements of C26-720.0 (Atriums).

6. Dwg. #A-4, Fourth Floor Plan. Show the relative extent of the dining, serving and kitchen areas, and identify partitions, guardrails and other enclosures. At dining areas show the room layout. (Code Section C26-110.2)

7. Dwg. #A-48, Main Roof Plan.

   a) Clarify if new spaces have been added adjacent to the existing bulkhead and identify their functions.

   b) Verify and substantiate that the egress from the areas or spaces at this level comply with the requirements of Code Table 6-1.

8. Dwg. #A-262, Bulkhead Elevations. Substantiate that the guardrail is designed to comply with the structural requirements of Code Section 27-558. (C26-902.3)(b).

STRUCTURAL

Repeat 9. The report on ceiling anchor tests describes only one test on a Ladd clip. This is not enough to recommend approval. Please revise the ceiling support details. (Repeat comment)

Repeat 10. The design of the roof framing shall include the loads from the antennae shown on Dwg. No. 6-48.1.

Repeat 11. Verify that the concrete-encased cables shown on Dwg. #E-5 can be supported by the floor above.

ELECTRICAL

*12. Dwgs. #E-5, E-R2: Expanded electric service. Submit complete information on equipment dimensions, clearances, transformer vault wall materials, conductor sizes, overcurrent device settings, containment of spilled transformer fluid and generator fuel, and the boundary separating the area under exclusive control of Con Edison from that under customer control. N.Y.C. Electrical Code sections 27-3048 (B30-44.1), 27-3045 (B30-43.0), 27-3047 (B30-44.0), 27-3272 (B30-246.0), 27-3274 (B30-248.0), 27-3275 (B30-249.0), and Bulletin No. 102-1967 (Revised), and NEC Sections 110-16 and 110-33.

(Modified repeat comment).

13. Dwg. #E-R2. Justify tapping the 13.2KV feeders; clarify how overcurrent protection of the tap conductors is accomplished, and show the splice chamber on the plans. N.Y.C. Electrical Code sections 27-3093 (B30-82.0), 27-3292 (B30-266.0).

*14. Dwgs. #E-R1, E-R2. Submit short-circuit calculations and tabulation of short-circuit ratings for buses, fuses, switches, and circuit breakers, with corresponding values of short-circuit current. N.Y.C. Electrical Code sections 27-3047 (B30-44.0), 27-3048 (B30-44.1), 27-3067 (B30-59.0); NEC sections 110-9, 110-10. (Modified repeat comment)

15. ESA Voice and Data Cable Specifications, paragraph 2.a. Delete reference to areas having no fire suppression system, so that the referenced cables will be required whenever used outside of metallic raceway to traverse air circulation spaces. N.Y.C. Electrical Code Bulletin No. 126-Revised 1983, NEC Sections 770-6(c), 800-3(b)(3).

16. Flack & Kurtz Specifications, page 19, paragraph 7.c. Substitute non-PVC insulation for THW and THWN wiring.

MECHANICAL

17. Specifications section 14010, "General Conveying Systems Provisions." Add the N.Y.C. Electrical Code to the list of Reference Standards, part 1.02-B.

18. Code Analysis, re: response to comment numbers 8 through 21 of Quality Assurance Division memo dated 12/5/88. Submit revisions conforming with the response.

19. Code Analysis, re: response to comment number 22 of Quality Assurance Division memo dated 12/5/88. PVC wiring is prohibited indoors, even if run in conduit. (Modified repeat comment)

*20. Affix PE or RA seal and signature to all drawings. The "C" and "ELV' series of dravings have not been signed and sealed. N.Y.C. Building Code section 27-157 (C26-110.2). (Modified repeat comment)

MECHANICAL

*21. Submitted HVAC drawings provide only an outline of the design work for the base building HVAC system modifications and do not contain sufficient design information (dimensions, design details, materials, constructin methods, etc.) based on which such work can be revieved for conformance with the N.Y.C. Building Code. Same applies to submitted outline specifications which are not included in contract documents for mechanical work in this building. See Code Section C26-110.2). (Modified repeat comment).
Detailed review will be performed when above information is received.

22. Design Guidelines VIII, Minimum Standards for Construction in New York City, Engineering Requirements - HVAC:

a) Add the requirements for Smoke Control in conformance with Code Section C26-1300.8.

b) For "General Requirements and Constructions Requirements of Fuel Oil Storage Tanks" add requirements of the New York State Department of Environmental Conservation - GNYCRR: Part 612, Part 613 and Part 614.

c) Revise NFPA 90-A, 1967 to NFPA 90-A, 1981.

d) Revise NFPA 96, 1964 to NFPA 96, 1984.

e) Revise ANSI-B9.1, 1971 to ANSI-B9.1, 1978.

Consultant's response could not be verified as submitted for review materials, therefore, the comment is herein repeated.

23. Dwg. #HVAC-1. For the new 6500 gallon fuel oil tank and piping indicated on the drawing provide part plans, sections and/or elevations as well as specifications and design details as required to demonstrate conformance with all applicable provisions of Subchapter 14, Article 17 of the N.Y.C. Building Code and standards for new and substantially modified petroleum storage facilities, 6NYCRR, Part 614.

24. Dwgs. #HVAC-5 and HVAC-6. Since outside air intakes shown on these dravings are in proximity of the existing Con Edison Substation venting louvers, please provide HVAC contract documents with clear description of the provision undertaken in this design to prevent the introduction of the potential substation fire into the building. See N.Y.C. Building Code RS 13-1, Sections 2-3.4.3. and 3-3.6.

25. Where modified sheet metal duct risers cross over to other shaft locations on numerous floors in the building, they shall either be enclosed in 2-hour rated construction, (the same as required for shaft enclosures) or fire dampers and access doors shall be installed at the penetrations of all floor slabs and/or shaft walls in conformance with Code Section C26-504.6(c) and RS 13-1, Section 3-3. (Repeat comment)

26. Dwg. #HVAC-47. Provide part plans, sections and/or elevations as required to clarify the location, connection points and coordination with O.A. ducts for the new 64 x 48 smoke exhaust system duct section. See Code Section C26-110.2. Also provide in this duct the code required opening protectives at penetrations of all rated partitions in conformance with RS 13-1, Section 3-3. (Repeat comment)

27. Dwg. #HVAC-48. For new air handling units, provide and show on the plans the physical locations of duct mounted smoke detectors in conformance with RS 13-1, Section 4-3. The same requirement is applicable to the air handling units with capacities greater than 15,000 cfm. Show the protection against combustion of air filter systems in conformance with requirements of RS 13-1, Section 2-4.1.2.

THE PORT AUTHORITY

The World Trade Center
One World Trade Center
New York, New York 10048

January 31, 1989

To

FEB 06 1989
RECEIVED

Per your request Jan 25 1989

Mr. Manuel Fernandez
Salomon Brothers Inc.
One New York Plaza
New York, NY 10004

SUBJ: 7 WORLD TRADE - SALOMON BROTHERS - TELECOMMUNICATIONS CABLING SPECIFICATION

Ref: Letter: Fernandez (Salomon)/Linn, dated 1/25/89

Dear Manny:

Our Engineering staff has reviewed the telecommunications cabling specification which was part of your December 19, 1988 submission and the only part that we ask you to modify is that dealing with Item 2. in the specification concerning "Air Circulation Spaces (Plenums)". It is requested that this Item a. be changed as follows:

Cables which are not encased in noncombustible tubing traversing environmental air circulation spaces (plenums) must meet or exceed UL classification CMP, OFCP, or OFNP.

This modification will be included in our forthcoming review comments of the overall December 19 submission. I hope that this information will enable you to proceed with an early purchase of your communications cabling.

Sincerely,

Robert J. Linn
Deputy Director for
Physical Facilities
World Trade & Economic Development

cc: L. Sanchez

cc - A. De Meo
M. Simone
R. Sumski
W. Mathison
D. Sullivan
J. Beech
D. Daniels
R. White
E. Schneider
File 7WTC/Tech-Elec

The World Trade Center
New York, NY

The Port Authority Trading Corp at The World Trade Center

Permits
Dec 19/E

W-7004 / W-7005

THE PORT AUTHORITY OF NY & NJ

World Trade & Economic Development Department
The World Trade Center
One World Trade Center
New York, New York 10048

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
NOV 01 1989
NOTED PVC 27 OCT 89
REFERRED TO JOB FOLD.

October 27, 1989

Mr. Manuel Fernandez
Salomon Brothers Inc.
Seven World Trade Center - 28th Floor
New York, NY 10048

RE: SEVEN WORLD TRADE CENTER - SALOMON BROTHERS INC. - TENANT ALTERATION APPLICATION/DRAWING SUBMITTALS - REVISED PROCEDURE

Dear Manuel:

In an effort to simplify the complexity of submittals, the following will set forth the methodology which offers the least amount of future problems. Please realize that since the "Base Building" and "Tenant" drawings span various groups of floors, each grouping will be assigned the respective 7004 and 7005 number with a dash (-) number suffix, e.g. 7005-1 floors 35 and 44.

This system will enable greater inspection and monitoring control over each submittal resulting in a simplified final close-out.

If you have any problems with this methodology, please call Edward McNierney on (212) 313-2257.

Sincerely,

Louis J. Menno, P.E.
Assistant Manager
Planning and Design Division
World Trade and Economic Development

EMcN/sm

cc: P. Cavanagh, P. Cooper, E. McNierney, L. Menno, H. Nagel, T. O'Connor, A. Vaccaro, R. Wegel

Prepared By		
Approved By		

Salomon Bros.

TAA # 7004 Base Building

NUMBER	DESCRIPTION	APPROVAL DATE	R.A. PKG. NOS.	REMARKS
7004-1	DEMOLITION OF PARTIAL FLOOR SLABS TO PRODUCE 3 - 2 FLR. HIGH TRADING FLOORS	1-20-89 By R. J. Linn	1, 2, 8	
7004-2	ALL BASE BUILDING MODIFICATIONS REQUIRED TO UPGRADE THE 7 WTC FACILITY TO ACCONODATE SALOMON BROS. INC. RELOCATION (FLRS. 1-47 incl. PENTHOUSE)	7-28-89 By A. Yacono	3, 4, 5, 6, 7, 9, 10, 11, 13, 16, 18, 19, 21, 28, 31	

Inc. ~ 7 WTC

TAA # 7005 Tenant Work

NUMBER	DESCRIPTION	TCRU APPROVAL DATE	P.A. PKG NOS.	REMARKS
7005-1	FLOORS 35 & 44	9-18-89	12, 14, 15, 20, 25, 29	AWAITING SIGNED TAA FROM SBI
7005-2	FLOORS 40-43	9-19-89 BY TCRU	17, 23, 30	AWAITING SIGNED TAA FROM SBI
7005-3	FLOORS 45 & 46		22, 33	APPROVAL WITHHELD BY TCRU - N COMMENTS
7005-4	FLOORS 34 & 41		26, 27	APPROVAL WITHHELD BY TCRU - N COMMENTS
7005-5	4TH FLR. CAFETERIA		28	APPROVAL WITHHELD BY TCRU. SEE COMMENTS
7005-6	FLOORS 29-33		32	APPROVED W/12 COMMENTS FROM TCRU
7005-7	FLOORS 1-2-3-4		34	

PA 36
9-75

THE PORT AUTHORITY OF NY & NJ

To Paul Cooper Room No 51N

From: **Anthony P. Vaccaro** / One World Trade Center
Suite ~~286x/x400/3037~~ 63W/466-3581

Date 8 / 16 / 89

SUBJ: 7 WTC - TEMPORARY AIR SUPPLY TO FLOORS 24 & 2

cc: P. Cavanagh, M. Glavicic, L. Menno, T. O'Conr
L. Sanchez, F. Varela, V. Vaccariello

I don't see any problem with the attached letter from Neil Lynch 8/9/89. Please advise ASAP if you do.

Anthony P. Vaccaro

Att.

SILVERSTEIN PROPERTIES

Silverstein Properties, Inc.
521 Fifth Avenue
New York, New York 10175
Telephone: 212 850-8012
Telex: 314490

Cornelius J. Lynch
Senior Vice President

August 9, 1989

BY HAND

Mr. Anthony P. Vaccaro
General Manager of
Planning, Design & Construction
World Trade & Economic Development Department
Port Authority of NY/NJ
1 World Trade Center
New York, New York 10048

cc: T.J. O'C.
P. Cavanaugh
V. Vaccaro
F. Vacca
L. Sanchez
M. Gladicek
L. Menno
P. Cooper

Dear Tony:

This will confirm the information that I conveyed to you concerning the air supply to the 24th and 25th floor of 7 World Trade Center.

Here is the background of the matter:

I. The upper portion of No. 7, including floors 24 and 25, has a gravity-feed air supply coming down from the roof through the various mechanical rooms to the individual floors. As you know, Salomon Brothers is taking out two partial floors high in the building and in doing so is forced to relocate the gravity feed air shaft. Salomon will replace the gravity feed air shaft with a fan feed air supply.

II. We have advised Salomon that the 24th and 25th floors will be occupied by the Government later this year. Because Salomon's fan air supply will not be in operation until next Spring, they will have to provide a temporary air supply for this space. Salomon has agreed to do so and will have this system in place well before occupancy by the Government. This temporary air supply will completely meet the Building Code of the City of New York. However, it will not be sufficient to pressurize floors 24 and 25 in case of a fire emergency. Floor-by-floor emergency pressurization is provided in No. 7 but is not required by the NYC Building Code. We have reviewed this situation with Flack & Kurtz (Salomon's engineers) and with Syska & Hennessy (our engineers) and we have been assured by all that this temporary installation completely meets the New York City Building Code. (Please see enclosed letter of July 20, 1989 from Flack & Kurtz).

III. Our Fire Safety Director has taken steps so that in case of a fire, the Fire Department and the Port Authority Police will be aware at the main floor Console that pressurization will be unavailable for these two floors.

SILVERSTEIN PROPERTIES

IV. We will notify you when Salomon completes the permanent air-supply transition next Spring.

As you may recall under our Lease with the Port Authority our obligation is to build and operate in accordance with the New York City Building Code and we will certainly meet that obligation. This letter is really for information purposes only, since we are not asking for any rights that we do not already have in the Lease.

If you would like any additional information on this matter, please let me know.

Sincerely,

Cornelius J. Lynch

CJL/yk

Enc.

RECEIVED
AUG 1 1989

Flack + Kurtz
Consulting Engineers

475 Fifth Avenue
New York, NY 10017
212 532-9600

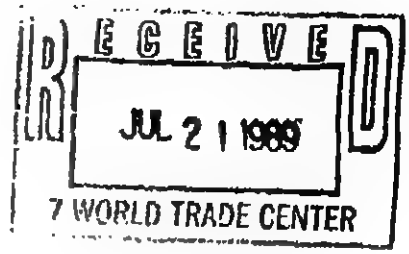
Chicago
Los Angeles
San Francisco

SN/SBI COKR

cc. JH
V. Bat

July 20, 1989

RECEIVED
JUL 21 1989
7 WORLD TRADE CENTER



Mr. Jack Glass
Salomon Brothers, Inc.
One New York Plaza
New York, NY 10004

Re: SBI at 7 WTC
F+K Ref. No. 88.22440.00

Dear Jack:

Enclosed please find a sketch detailing the ductwork modifications required in the existing 23rd floor MER to provide temporary outside air to the 24th and 25th floors. This transfer duct connection of the low rise outside air shaft (serving floors 6 to 23) to floors 24 and 25 of the high rise outside air stack is required due to the demolotion of the existing high rise outside air shaft. The new 96 x 22 outside air duct is adequately sized to handle the ventilation requirements under normal operation. However, in the event of a smoke condition, the requirements for pressurization outside air on either of these two floors (24 or 25) will create velocities of 2,800 feet per minute within this transfer duct and impose pressure drops higher than normally experienced on the existing fans. While these fans will pull in outside air for pressurization, they may not be capable of inducing the total air required per the base building design (35,000 cfm).

It should be noted that pressurizing the "sandwich" floors is not required by the NYC code. We would like to emphasize, however, that this is only a temporary solution for providing outside air to these floors. Once the final SBI outside air system is completed this transfer duct will be removed and SBI's outside air system will provide the base building design quantities of outside air to floors 24 and 25 in both the ventilation (5,250 cfm/floor) and pressurization (35,000 cfm/sandwich floor) modes of operation.

Flack + Kurtz
Consulting Engineers

If you have any questions, please do not hesitate to call.

Very truly yours,

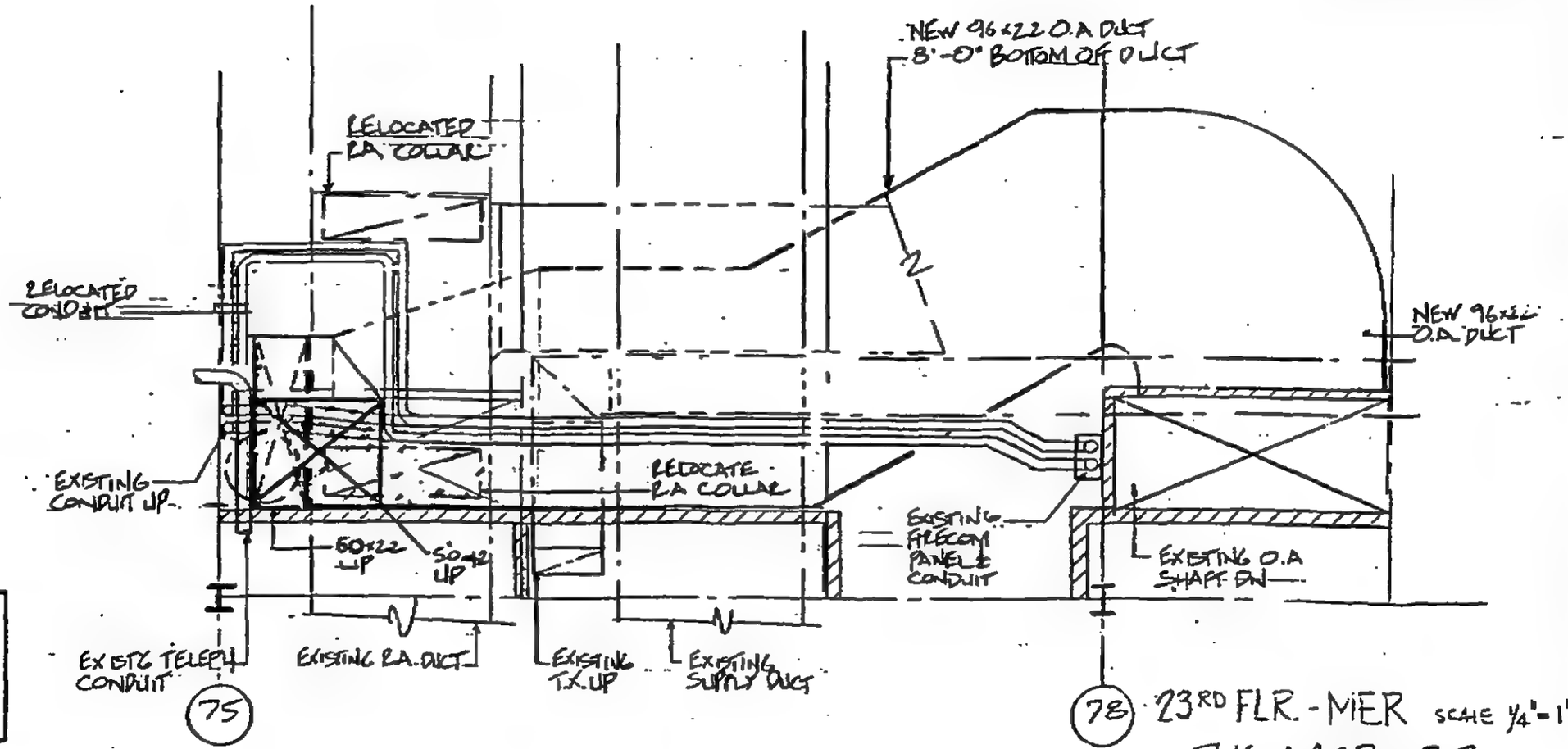
FLACK + KURTZ Consulting Engineers

David Cooper
Senior Associate

enclosures

cc: M. Fernandez - SBI
W. Mathison - SOM
M. Smith - SPI
J. Beech - F+K
T. Battaglia - F+K

RECEIVED
JUL 21 1999
7 WORLD TRADE CENTER



23RD FLR. - MER SCALE 1/4" = 1'-0"

SK-MER-23

DATE: 7-20-99

Flack + Kurtz
Consulting Engineers
475 Fifth Avenue
New York, N.Y. 10017

THE PORT AUTHORITY

World Trade & Economic Development Department
One World Trade Center
New York, New York 10048

JUN 15 1989

RECEIVED

June 9, 1989

Mr. Manuel Fernandez
Vice President, Facilities Management
Salomon Brothers, Inc.
One New York Plaza
New York, New York 10004

W-7004

SUBJECT: 7 WTC - SALOMON BROTHERS, INC. -
REVIEW OF CONTRACT DRAWINGS
(BASE BUILDING)

Dear Manuel:

This is to advise you that the Port Authority has reviewed the following drawings and has no objections to the work described:

DRAWING NO.	DATE
A-5	5/22/89
A-200	5/22/89
HVAC-4 & 5	5/22/89
P-5	5/22/89

The above noted drawings were extracted for expeditious review from the package submitted May 22, 1989. The balance of the drawings are presently being reviewed and you will be advised shortly regarding any comments.

Kindly contact me if you need any clarification on this matter.

Regards,

Luciano Sanchez

cc: P. Cavanagh, P. Cooper, R. Linn, E. McNierney, A. Vaccaro,
E. Schneider (SBI)

/mjs

Member of the New York Stock Exchange, Inc.

One New York Plaza
New York, N.Y. 10004 (212) 747-7000

Salomon Brothers Inc

MAY 05 1989

PSC 4 May 89
J de Fold

W 7002

May 2, 1989

Mr. Luciano Sanchez
World Trade Center Planning
Port Authority of New York and New Jersey
One World Trade Center
New York, NY 10048

Re: 7 WTC - Submission of Missing Drawing From
1/20/89 Base Building Modification Set

Dear Luciano:

In reviewing the list of construction documents approved by the Port Authority last week, we discovered a missing drawing that should have been part of our 1/20/89 submission package currently under review.

The attached D-5H, dated 1/20/89, describes the demolition of existing conditions on the 5th floor. As you know, Paul Cooper has approved all submissions through our 3/1/89 set except for HVAC new construction. Given our urgent need to begin demolition of existing conditions prior to the installation of our transformer vault work (already approved by the Port Authority), we would appreciate your assistance in gaining either immediate approval or a limited start on this floor. We have discussed the above with Silverstein Properties and, based on the scope of work, they have consented to our proceeding with your concurrence.

Thank you for your time and consideration in this matter. We look forward to your response.

Sincerely,

Evan

Evan B. Schneider
Vice President

cc: R. Linn
P. Cooper
E. McNierney
W. Mathison
D. Sullivan
J. Beech
D. Cooper
D. Daniels
R. Pavesi
S. Orr
B. Reinholtz
R. White/File
(7-8800-02.000.10, 004.4)
M. Fernandez
F. Edwards

Atlanta/Boston/Chicago/Dallas/Frankfurt (Affiliate)/London (Affiliate)/Los Angeles/San Francisco/Tokyo (Affiliate)/Zurich

B U C K S L I P

To: Luciano Sanchez
From: Paul S. Cooper
Date June 6, 1989
Subject: 7 WTC - SALOMON BROS. - LADD CEILING CLIPS

Copy To: Dovletian, R. Linn, E. McNierney, E. Rama

The May 9, 1989 letter, Schneider/Sanchez (copy attached), covering various documents relating to the use of Ladd ceiling clips, was submitted to my office for status clarification.

This will confirm that this same information was previously submitted and reviewed by TCRU, and as of the memorandum Ennala Ramabhushanam/Robert Linn, dated March 24, 1989, there were no comments relating to this subject. Therefore, the Ladd Ceiling Clip, as proposed for use by the project consultant had been approved.

PSC

Paul S. Cooper
Supervisor
Design Standard/TCRU

PSC/dm

~~Mem~~ Buckslip

T.O.: Luciano Sanchez
Fr: PS Cooper
Date: June 5, 1980
Subj: 7 WTC - SALOMON BROS. - LADD CEILING CLIPS

cc: Doulatian, R. Linn, E. McNiemey, E. Rama

The May 9, 1980 letter, Schneider/Sanchez (copy attached), ~~was submitted to my office along with~~ covering various documents relating to the use of Ladd ceiling clips, was submitted to my office for clarification ~~on~~ of its ~~approval/non-approval~~ status.

This will confirm that this ~~same~~ same information was previously submitted and reviewed by TCRU, and as of the memorandum E.R./R.L. (spell), dated March 24, 1980, there were no comments relating to this subject. Therefore, the Ladd ~~cli~~ ceiling clip, as proposed for use by the project consultant had been approved.

PSC.

Member of the New York Stock Exchange, Inc.

One New York Plaza
New York, N.Y. 10004 (212) 747-7000

MC MIERNEY

PLEASE LET'S TALK ABOUT THIS

Salomon Brothers Inc

Paul, Could you please verify that these ceiling details are ok.

Ed McMierney

May 9, 1989

Mr. Luciano Sanchez
World Trade Center Planning
Port Authority of New York and New Jersey
One World Trade Center - 74 South
New York, NY 10048

Re: 7 WTC - Ladd Ceiling Clip Approval

Dear Luciano:

Several months ago the issue of an approved ceiling hanger clip was discussed with your office. Apparently, there was some confusion regarding the Port Authority's ability to approve the mechanism given the lack of a BSA number.

In our 3/1/89 Tenant Package submission, drawing A-355 displays a ceiling detail utilizing the Ladd clip. As part of that filing package we included formal approval documentation from the City of New York Board of Standards and Appeals.

I have attached for your review another copy of the correspondence confirming that BSA calendar number 48-69-SA grants approval of the Ladd Clip System and all associated componentry.

We hope that both our 3/1/89 construction package and this additional copy of the BSA approval will serve as a confirmation of the installation method that we will implement.

Should you have any further questions or comments, please call.

Sincerely,

Evan

Evan B. Schneider
Vice President

cc: W. Mathison
D. Sullivan
R. Pavesi
S. Orr
B. Reinholtz
P. Kirby
R. White/File (7-8800-02.004.0)
M. Fernandez
F. Edwards

789

RIDER RESPONSE ALTERATION
APPLICATION No. W-7004 - SALOMON BROTHERS - 7 WTC - BASE BUILDING MODIFICATIONS

Structural

Comment: 9, The report on ceiling anchor tests describes only one test on a ladd clip. This is not enough to recommend approval. Please revise the ceiling support details (repeat comment).

Response: Enclosed is a copy of New York City Board of Standard and Appeals approval for the anchor used for ceiling support of this project.

Comment: 10. The design of the roof framing shall include the loads from the antennae shown on drawing No. C-48-1.

Response: Actual loading from antennaes is shown on drawing submitted to the Port Authority on March 1st, 1989 and computation for effect on structure are enclosed herewith.

Comment: 11. Verify that concrete encased cables shown on drawing E.5 can be supported by the floor above.

Response: Enclosed are computations showing the load impact of concrete encased conduits supported on beams above.

AT:mm
2/28/89
Sal2.doc

PR COMMENT NO. 6 (2)

The City of New York

BOARD OF STANDARDS AND APPEALS

[illegible] LAFAYETTE STREET, NEW YORK, N.Y. 10013

Telephone: 566-5174
5104.

JOSEPH B. KLEIN, Chairman

August [illegible], 1973

Mr. Donald E. Kearns, President
Ladd Tool Company, Incorporated
P. O. Box 467
West Chester, Pennsylvania 19380

Re: Cal. No. 48-6[illegible]-M

Dear Mr. Kearns:

This is to confirm that the above Calendar Number refers to the approval of the Ladd-Hilti powder actuated tool, including the pin, load and clip combination and any other accessories necessary for its operation.

Very truly yours,

Stuart Lowenthal

Stuart Lowenthal
Assistant Engineer

SL/ab

Mr. Seaman

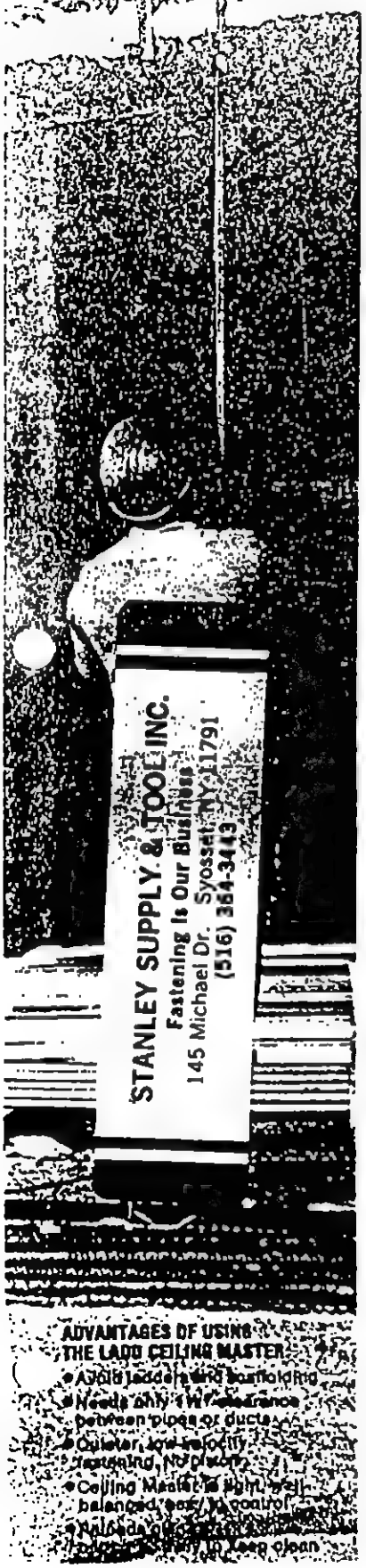
STANLEY SUPPLY & TOOL INC.
Fastening Is Our Business
145 Michael Dr. Syosset, NY 11791
(516) 364-3443

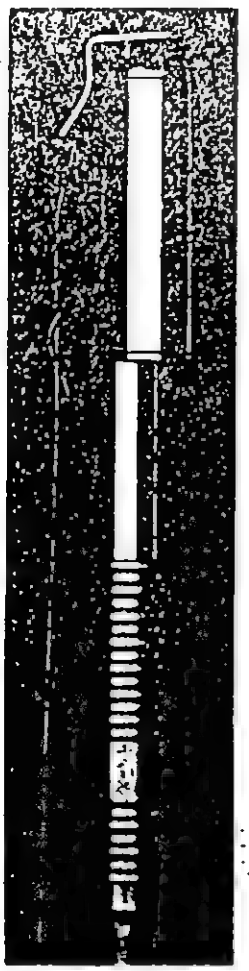
P/A comment 1

(3)

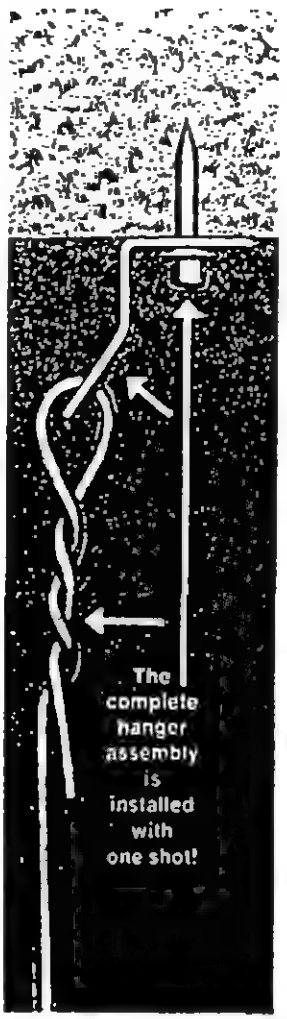
"We were able to reduce our labor costs approximately 60%."

Tomlinson Engineering Company* Charlotte, North Carolina





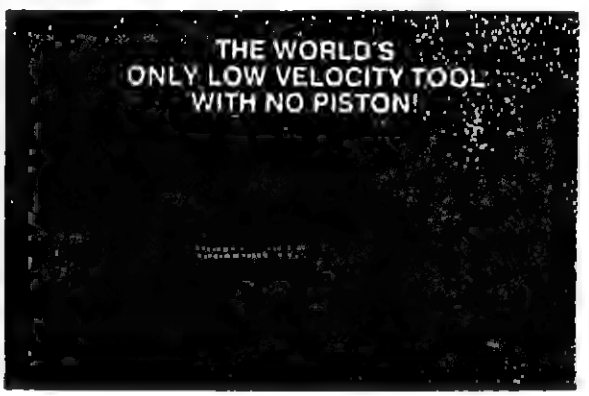
No piston.
No trigger!



Over 50% greater holding power than the other leading pole tool!!

(Test results available upon request)

Even when used with ordinary alignment methods, the Ladd Ceiling Master is the fastest tool around. But when you combine Ceiling Master with laser alignment systems, you get an incredibly fast, accurate and easy-to-use system—Write today for the complete story.



The Ladd Ceiling Master is the most important breakthrough ever in tools for the ceiling contractor. It's the fastest, easiest and most reliable way to install hanger wires all in one step!

As one contractor* writes: ". . . we have installed about 30% of the hangers on the large 40-story North Carolina National Bank Plaza building with excellent results . . . Approximately 1,500 hangers per floor in areas cluttered with sheetrock, sections of metal duct and many other items that would hamper the use of scaffolds."

"It was necessary to install the hangers exactly 4 foot on center in each direction, and plumb. By using 2 laser tools and 3 of your Ceiling Masters, we were able to reduce our labor cost approximately 60%."

GREATER HOLDING POWER THAN ANY PISTON TOOL!

For complete details on the Ladd Ceiling Master, write to:

Ladd
TOOL COMPANY, INC.
Lincoln Industrial Park • Box 467 • West Chester, Pennsylvania 19380 • (215) 436-4838

Specialists in Ceiling Hanger Tool Systems:

Ceiling Master *	for concrete and steel decks
J-Master *	for open-web bar joists
Clip-Pur *	for Z-purlins
ScrewMaster	for wood beams and joists

PA COMMENT NO. 9

48-69-SA

APPLICANT—Ladd Tool Company, Incorporated, owner.

APPEARANCES—

For Applicant: None.

ACTION OF BOARD—Resolution amended in accordance with the report and recommendation of Committee on Test.

ACTION OF BOARD—Application reopened and resolution amended in accordance with the report and recommendation of the Committee on Test.

THE VOTE—

Affirmative: Vice Chairman Becker, Commissioner Klein, Commissioner Madigan, and Commissioner Nolan 4
Negative: 0
Absent: Chairman Galvin 1

THE RESOLUTION—

WHEREAS, the report of a Committee on Test reads:

48-69-SA—Amendment to resolution as to change of owner-manufacturer.

Ladd Tool Company, Incorporated, West Chester, Pennsylvania requested that the resolution adopted April 29, 1970 under Calendar 48-69-SA be reopened and amended so as to show a change of owner-manufacturer.

PROPOSED USE: Powder actuated tool.

DESCRIPTION: There has been no changes in the material used nor in the method of manufacture of the tool.

Ladd Tool Company, Incorporated have submitted an affidavit showing that they have purchased all rights, assets etc. of Model UTI Stud Fastening System from U. S. Expansion Bolt Company, York, Pennsylvania, and that they are the owner-manufacturer of the system.

RECOMMENDATION: The Committee on Test recommends that the resolution adopted April 29, 1970 under Calendar 48-69-SA be reopened and amended so as to show a change of owner-manufacturer, new owner-manufacturer being Ladd Tool Company, Incorporated on condition that the requirements of the resolution adopted April 29, 1970 under Calendar 48-69-SA be complied with.

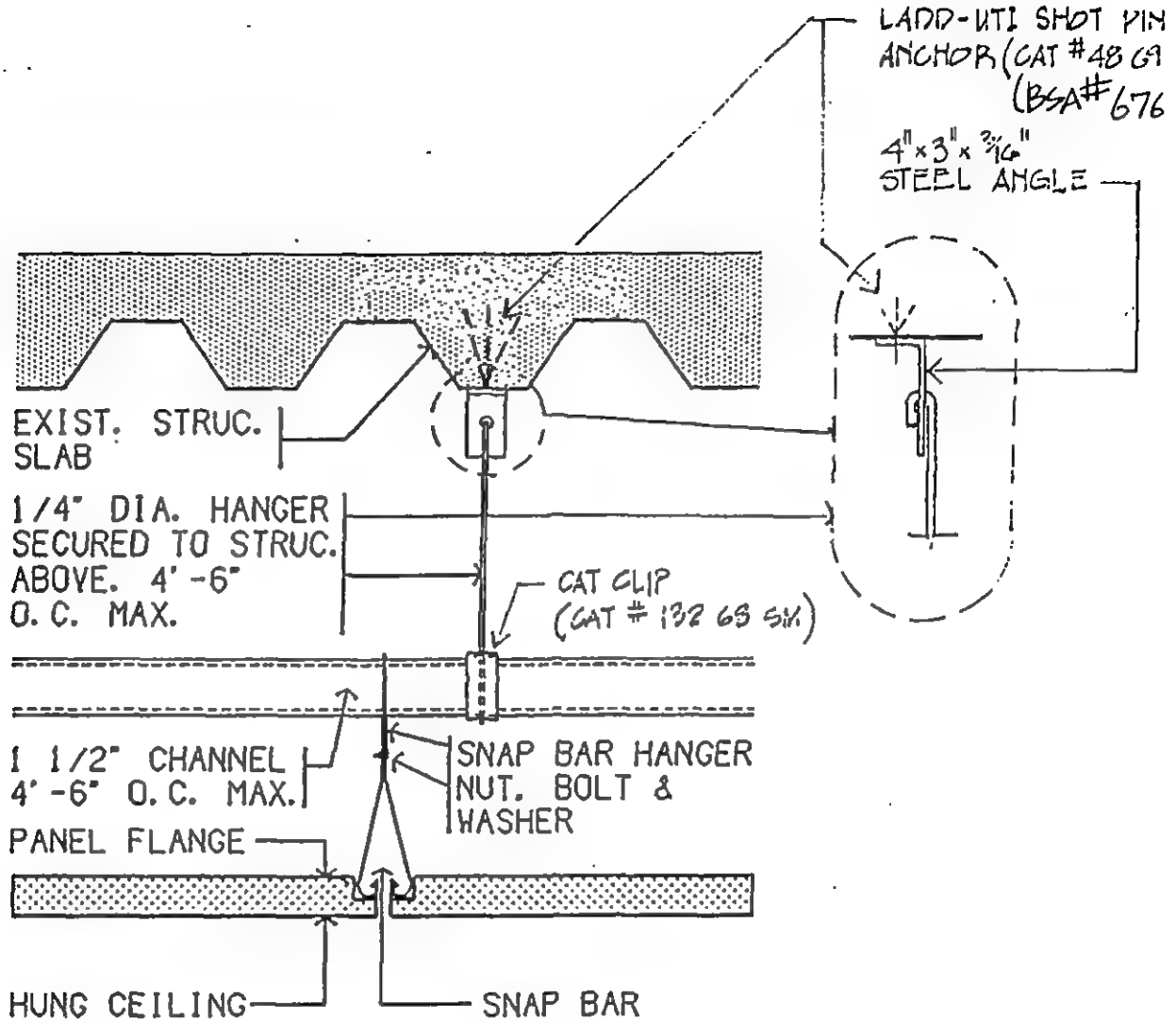
A sworn affidavit by a responsible officer of the manufacturer, familiar with the materials, processes and controls of the product manufactured, shall be filed annually with this Board, certifying that such materials, processes and controls are being maintained as were in effect at the time of this approval or previous approval under this Calendar Number. Failure to notify the Board of change of ownership, change of address or to submit the annual affidavit will be cause for revocation of approval.

(Sgd.) H. M. KARSON, A.I.A.,
Deputy Director,

JOHN A. DASTE,
Asst. Engr.,

STOJAN LOPICENTIAL,
Asst. Engr.,
Committee on Test.

Resolved, that the Board of Standards and Appeals does hereby amend the above cited resolution in accordance with the above report.

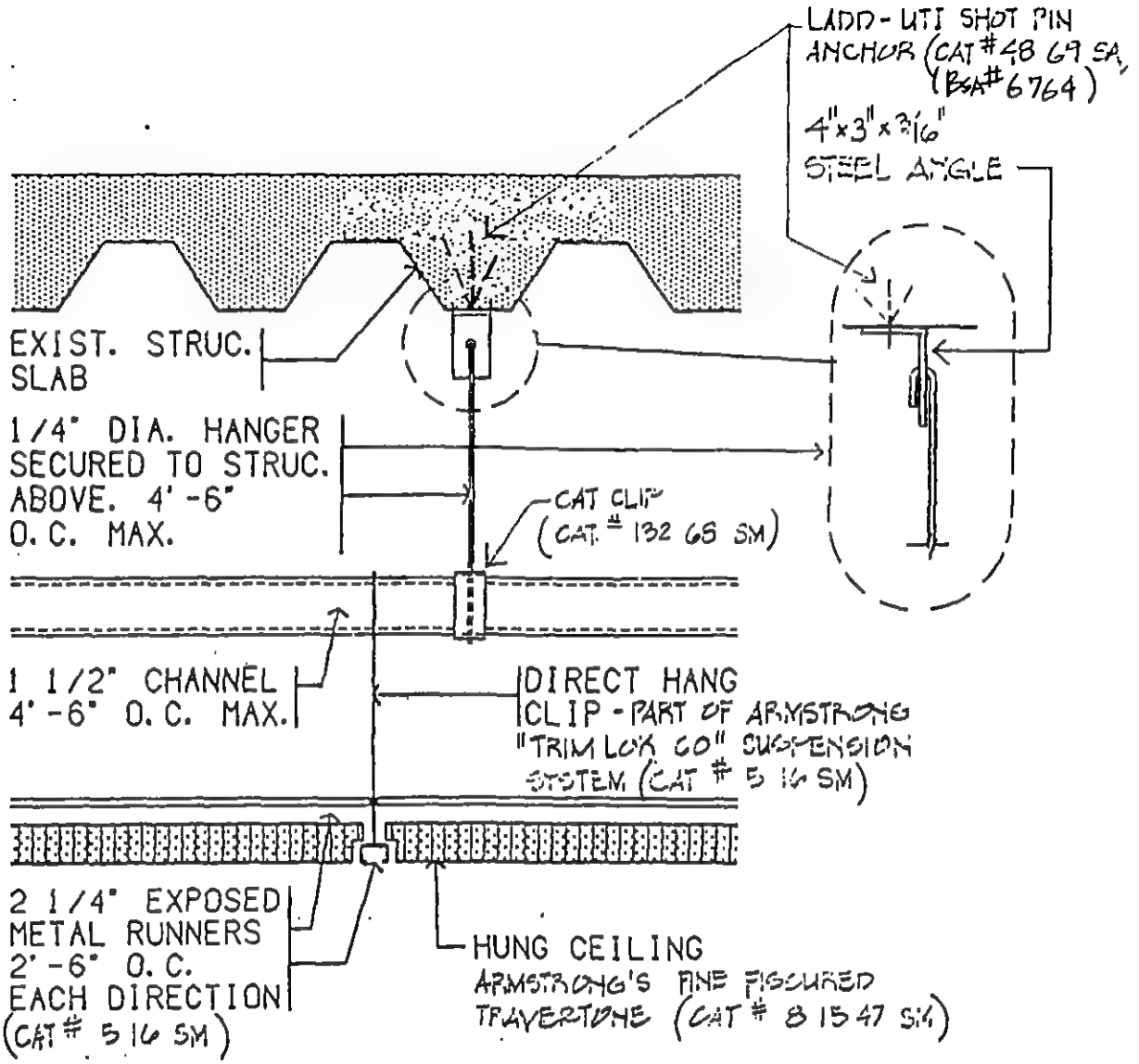


TYPICAL METAL PAN CEILING DETAIL

N.T.S.

PRELIMINARY

REVISED Oct. 5, 89

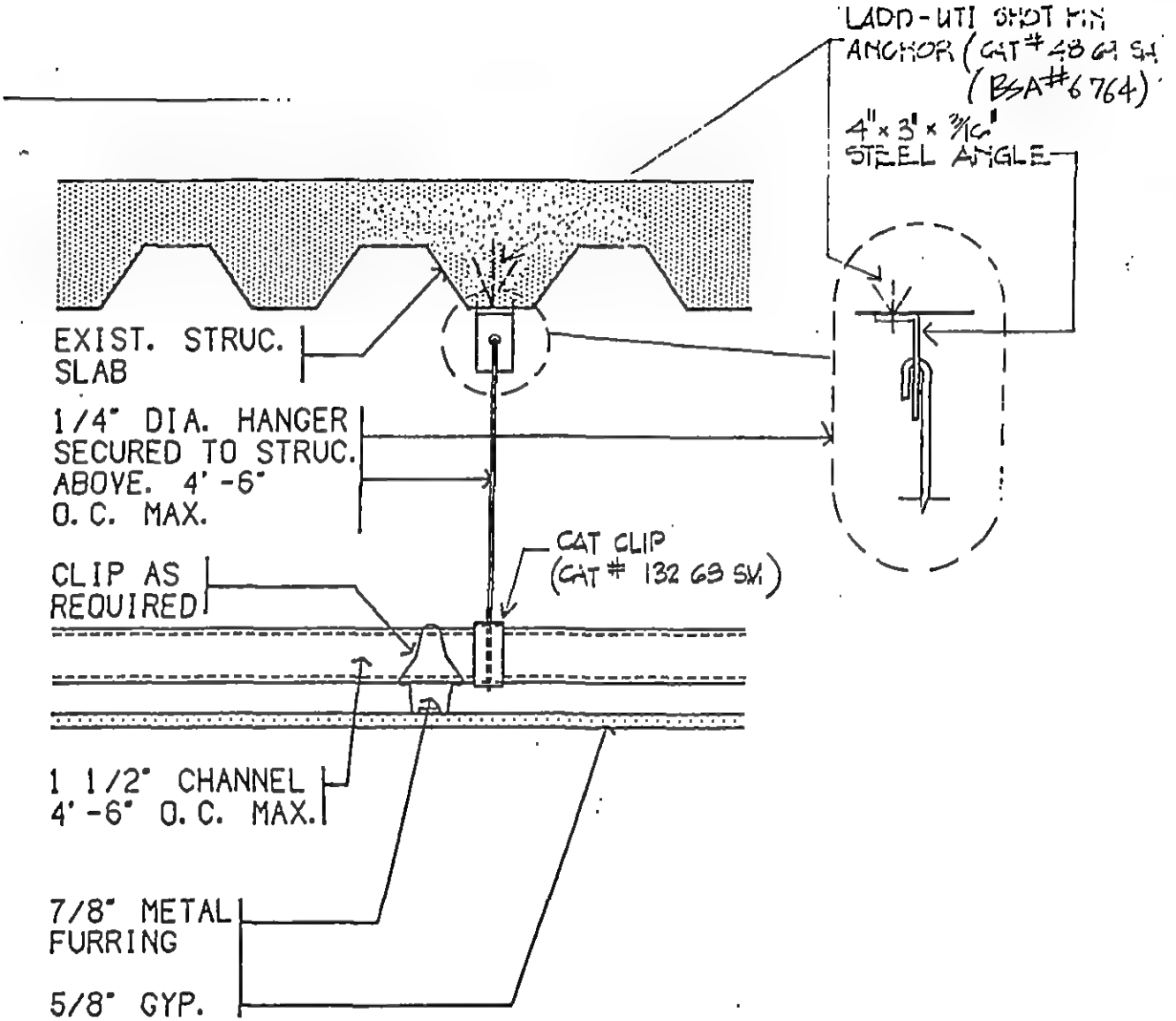


TYP. HUNG CLG. DETAIL W/EXPOSED RUNNERS

N.T.S.

PRELIMINARY

REVISED 10 OCT. 80



TYPICAL GYPSUM WALLBOARD CEILING

1'-9

N.T.S.

PA COMMENT #9 (5)

August 10, 1979

ambric testing inc.

3600 crawford st.
philadelphia, pa.
19129
215-439-7944

Ladd Tool Company, Inc.
Lincoln Industrial Park
P.O. Box 467
West Chester, PA. 19380

Ball Approval #676

The following is a report of our tests to determine the loadbearing capacity of Ladd Ceiling Clips shot into concrete by you during your visit to our laboratories, June 29, 1979.

LABORATORY NO. 10209

DATA RELATIVE TO CONCRETE

Two Nominal 2' x 4' x 5' concrete slabs were cast in our laboratories of Class 3000 P.S.I. concrete.

TEST RESULTS

SLAB "A" DIRECT IN-LINE PULL

CLIP NO.	MAXIMUM LOAD SUSTAINED (lbs.)	CHARACTER OF FAILU
1	1650	Clip broke at hole
2	1620	Clip bent and bent pin
3	1790	Pin was extracted
4	1690	Clip bent, pin bent and pulled out
5	1720	Clip bent and slipped off end of pin
	Avg. 1694	

SLAB "B" - PULL @ 45° ANGLE – 1764 Avg.

Respectfully submitted,

AMBRIC TESTING, INC.

H.M. Carson

H.M. Carson, President

HMC/jmc

File in "General Correspondence" W-7004 Folder.

MEMORANDUM

To: Mr. R. Linn, Deputy Director for Physical Facilities
From: Ennala Ramabhushanam
Date: April 12, 1989
Subject: 7 WTC - SALOMON BROTHERS - ELECTRICAL WIRING SPECIFICATIONS

Reference:
1) Buckslip, R. Linn to P. Cooper and T. Bell, dated 4/4/89
2) Letter, M. Fernandez (Salomon Bros.) to R. Linn, dated 4/3/89
3) Letter, D. Daniels (Flack and Kurtz) to M. Fernandez, dated 3/30/89.
4) Letter, B. Reinholtz (Morse Diesel) to M. Fernandez, dated 3/23/89
5) Letter, R. Linn to M. Fernandez, dated 2/2/89
6) Letter, R. Linn to M. Fernandez, dated 1/2/89.

Copy To: T. Bell, P. Cooper, E. Daly, V. Dovletian, M. Poliacof, A. Rohssler, L. Sanchez, A. Vaccaro, D. Wolf

This is response to your buckslip, Reference number 1, and is intended to assist you in the implementation of the Port Authority policy prohibiting the use of PVC insulation for electrical power lines within buildings in Port Authority and Tenant construction installations.

Salomon Brothers has taken an appropriate step in the direction of adhering to this policy by specifying non-PVC insulation for their vertical electrical risers, and have so indicated in Reference numbers 2 and 3. However, full adherence to the PVC insulation prohibition is required, and in this regard it may be helpful to mitigate their fears concerning the dollar premium they believe would be associated with such an installation.

The $215,000 estimate developed by Morse Diesel in Reference number 4, for additional costs for using XHHW instead of THWN is not fully substantiated. Their estimate comprises two numbers: first, $40,000 for 104,000 linear feet in the core and shell work; and second, $175,000 for Tenant space work, whose design is currently incomplete, and for which the estimate gives no quantity. Based on the former cost and quantity, the unit cost is $0.38 per linear foot. This unit cost is considered inaccurate for the following reasons:

1. If XHHW were used in a cable and conduit installation, for the core and shell, the additional material cost would be $0.03 - $0.05 per linear foot, while the labor cost is equivalent to the currently proposed installation. The resultant total cost differential should therefore not exceed ($5,000).

2. Alternatively, if MC cable with XHHW were used for the core and shell instead of AC cable with THWN and ground wire, the additional material cost would be $0.25 per linear foot. This will be offset by approximately one-half because of installation costs for the shorter lengths of MC cable. The resultant total cost differential, should not exceed $12,000.

3. If Morse Diesel's total estimate for the quantity of all work is correct, the application of the previous two wiring alternatives should produce cost differentials not exceeding $27,000 and $65,000, respectively.

Ennala Ramabhushanam

Ennala Ramabhushanam, P.E.
Manager
Quality Assurance Division

PSC/MP/dm

BUCKSLIP

TO: P. Cooper, T. Bell
FROM: Robert J. Linn
DATE: April 4, 1989
SUBJ: **7 WTC - SALOMON BROTHERS - ELECTRICAL WIRING SPECIFICATIONS**

COPY TO: E. Daly, L. Sanchez, A. Vaccaro, D. Wolf

On January 2, 1989 I advised Mr. Fernandez of Salomon Brothers of our electrical cabling criteria. Attached is an April 3rd response from Mr. Fernandez advising of the fact that Morse Diesel, Salomon's construction manager, states that if they were to use an XHHW (non-PVC) insulation the cost premium is estimated at $215,000. You have previously advised me that the premium would not be extensive as stated by Morse Diesel. I would like your comments on this as soon as possible.

R. J. L.

Att.

Member of the New York Stock Exchange, Inc

One New York Plaza
New York, N.Y 10004 (212) 747-7000

Salomon Brothers Inc

RECEIVED

APR - 3 1989

PORT AUTHORITY OF N.Y. & N.J.
WORLD TRADE ECONOMIC DEV.
DEP. DIR. PHYS FAC.

April 3, 1989

Mr. Robert Linn
Deputy Director for Physical Facilities
World Trade & Economic Development
Port Authority of New York and New Jersey
One World Trade Center
New York, NY 10048

Re: 7 WTC - Electrical Wiring Insulation Specifications

Dear Bob:

In response to your 1/2/89 and 2/2/89 letters (attached) and other recent inquiries about electrical wiring insulation for our 7 WTC project, we have researched the issues involved and submit the following:

1. Our consultants advise that the New York City Building Code, the National Electrical Code and the National Fire Protection Association Code permit THWN (PVC) insulation in conduit for electrical riser and branch wiring. The above mentioned Codes are identified in our 11/23/89 Three-Party Agreement (Article 5.2.a) as the Codes with which compliance is required.

2. Although not required by Codes, we are voluntarily agreeing to provide XHHW (non-PVC) insulation on our vertical risers of 600 volts or less. This application will match the existing risers at 7 WTC and meet the Port Authority's request for a specification upgrade.

3. For branch circuit wiring we propose to specify THWN (PVC) insulation, which meets Code requirements and matches the existing branch circuit wiring at 7 WTC (please refer to Flack & Kurtz' 3/30/89 statement of Code compliance, attached). Morse Diesel has advised that changing the branch circuit insulation to XHHW (non-PVC) carries a cost premium estimated at $215,000 (please refer to Morse Diesel's 3/23/89 letter, copy attached).

We respectfully request approval of our electrical wiring specifications as per the above proposal.

Sincerely,

Manuel Fernandez

Manuel Fernandez
Vice President

atts.

cc: L. Sanchez
E. McNierney
V. Dovletian
P. Cooper
W. Mathison
D. Sullivan
J. Beech
D. Daniels
A. DeMeo
M. Simone
R. White/File (7-8800-02.000.8, 005.2)
E. Schneider
F. Edwards
R. PAVESI
B. REINHOLTZ

Flack + Kurtz
Consulting Engineers

475 Fifth Avenue
New York NY 10017
212 532-9600

Chicago
Denver
San Francisco

March 30, 1989

RECEIVED
MAR 31 1989
FACILITIES MGMT.

Mr. Manuel Fernandez
Salomon Brothers, Inc.
Two New York Plaza
New York, New York 10004

Re: SBI @ 7WTC
Electrical Wiring Insulation
F+K Reference No. 88.22440.00

Dear Manuel:

As directed by SBI, we will specify electrical wiring insulation as follows:

1. Vertical Risers - 600 volts or less - XHHW:

   This application agrees with P.A. requirements and matches the existing building risers at 7 World Trade Center.

2. Branch Circuit Wiring - THWN:

   This application is consistent with the Electrical Code of the City of New York, National Electrical Code and matches existing branch circuit wiring at 7 World Trade Center.

Very truly yours,

FLACK + KURTZ Consulting Engineers

Drew Daniels, P.E.
Associate

DD/ksp

cc: E. Schneider - SBI
W. Mathison - SOM
B. Reinholtz - M/D
J. Beech - F+K

Morse Diesel

RECEIVED
MAR 27 1989
...ILITIES MGMT.

March 23, 1989

Mr. Manuel Fernandez
Salomon Brothers, Inc.
Two New York Plaza - 34th Floor
New York, NY 10004

Re: SBI - 7 World Trade Center
Electrical

Dear Mr. Fernandez:

The estimated quantity of branch wiring for Core and Shell only is approximately 104,000 L.F. of type THW. If XHHW branch wiring is required for branch circuitry the premium cost would be approximately $40,000.00.

The quantities of branch wiring required for the tenant portion of the work is monumental compared to the Core and Shell quantity

The writers best generic estimate is that there could be better than a $175,000 premium for XHHW wiring.

$215,0

Please be guided accordingly.

Very truly yours,

MORSE/DIESEL, INC.

Bennett Reinholtz
Vice President

/pa

cc: R. Pavesi
S. Orr
J. Berrioes
G. Burgess
J. Klein
E. Schneider

50 Years Amer

THE PORT AUTHORITY

February 2, 1989

Mr. Manuel Fernandez
Salomon Brothers Inc.
One New York Plaza
New York, NY 10004

RECEIVED
FEB 08 1989

Dear Manny:

Pursuant to our conversation of February 1, 1989, I am enclosing a second copy of the letter that we sent to you on January 2, 1989 dealing with the alteration electrical code requirements for your tenant alteration work in 7 World Trade.

In addition to this information, I think it is important for you to understand that the Port Authority policy is that all high voltage electrical lines should be using a cover of XHHW rather than the more common THHN which contains PVC. We have found that in ordering it in large quantities with advance notice there is very minimal cost difference in price. Port Authority policy is to use the XHHW which in case of a fire minimizes the production of poisonous fumes.

Sincerely,

Robert J. Linn
Deputy Director for
Physical Facilities
World Trade & Economic Development

Encl.

cc: L. Sanchez

cc: A. De Meo
-M. Simone
-R. Sawski
-W. Mathison
-D. Sullivan
J. Beech
D. Daniels
R. White
E. Schneider
File 7WTC / Tec Ele Pers

The World Trade Center
New York, NY

The World Trade Center
One World Trade Center
New York, New York 10048

January 2, 1989

Salomon Brothers, Inc.
One New York Plaza
New York, New York 10004

Attn: Mr. Manuel Fernandez
Vice President

RE: 7 WTC - SALOMON BROTHERS, INC. - TENANT CONSTRUCTION ALTERATION ELECTRICAL CODE REQUIREMENTS

Dear Manuel:

As a follow up to our meeting circa December 21, 1988, we are herewith advising you that all electrical work performed in the above captioned project must conform with the requirements of the Building Code of the City of New York and the National Electrical Code in which the most stringent application of each Code shall prevail.

In the unlikely event that a unique condition will develop which is not specifically addressed by either Code, a determination will be made based upon sound engineering practice and the best life safety requirements for your leasehold.

Should you need any further guidance on this matter, kindly contact Mr. L. Sanchez, of my staff, at (212) 466-8566.

Sincerely,

Robert J. Linn
Deputy Director for
Physical Facilities
World Trade & Economic Development

cc: T. Donovan, P. LaRocco, L. Sanchez

bcc: G. Daly, R. Lachman, A. Vaccaro

M E M O R A N D U M

To: R.J. Linn, Deputy Director for Physical Facilities, WT&ED
From: Ennala Ramabhushanam
Date: March 22, 1989
Subject: 7 WTC - SALOMON BROTHERS - TAA 7004

Reference: Memorandum E. Ramabhushanam to R.J. Linn, dated 3/13/89

Copy To: Cooper, Dovletian, LaRocco, Monti, Sanchez

On 3/21/89 simultaneous working meetings were held between TCRU staff and Salomon Brothers Consultants on a one-to-one basis for each discipline, for the purpose of expediting the review process towards a recommendation of approval for the tenant to proceed with the base building modification stage of the project, which is the first of two stages, the second stage being their tenant work.

The sixty-three (63) technical comments issued by TCRU on 3/13/89 in the referenced memorandum, which included all the comments resulting from reviews of several tenant submissions reviewed up to that date, were discussed, and resulted in the following:

1. Fourteen (14) tenant-work related comments will be deleted from the 3/13/89 memorandum and carried forward to the tenant-stage submissions. These items, as listed below, will be incorporated by the Tenant's Architect into his future tenant-work submissions. Included in this category are:

   - o 11 Architectural comments (#1,2,3,4,5,7,11,14,15,16 and 17)
   - o 1 Electrical comment (#35)
   - o 2 Mechanical comments (#51, and part of 61)

2. Twenty-two (22) base-building-modification comments were resolved and eliminated. These require no further action. Included in this category are:

   - o 7 Architectural comments (#6a, 8,9,10b and c, 12,13 and 18)
   - o 2 Structural comments (#25 and 27)
   - o 7 Electrical comments (#28,29,31,32,33,37, and 40)
   - o 6 Mechanical comments (#45,46,47,48,49 and 57)

3. Twenty-seven (27) base-building-modification comments will require changes to the drawings, specifications, and various technical analyses. The Tenant's Architect has agreed to revise his contract documents accordingly and resubmit them for final approval. Included in this category are:

   - o 6 Architectural comments (#6b and c, 10a,19,20,21 and 22)
   - o 3 Structural comments (#23,24, and 26)
   - o 2 Electrical comments (#34, and 38)
   - o 16 Mechanical comments (#41,42,43,44,50,52,53,54,55,56, 58,59,60, part of 61,62, and 63)

4. Three (3) electrical comments, #30, 36 and 39, pertain to the limitation of the use of PVC insulated cables, and are yet to be resolved.

Please note that comments #6, 10, and 61, were each resolved in two parts, and that each part was placed in its appropriate category. This resulted in an actual total of sixty-six (66) comments resolved or outstanding.

Ennala Ramabhushanam

Ennala Ramabhushanam, P.E.
Manager
Quality Assurance Division

PSC/VAD/dm

SALOMON BROTHERS INC.; TAA W-7004
NOVEMBER 22, 1988
LOG ITEM NO. 7

Subject: SEVEN WORLD TRADE CENTER - EXISTING SECOND FLOOR AUDITORIUM

A meeting was held at the office of L. Silverstein, the building's owner. Attending were R. Linn, L. Sanchez and S. Johnson of WT/ED, P. Cooper and G. Breiding of TCRU/Design Standards, J. Sicreti of Emery Roth Associates, A Craig of L. Silverstein, and D. Sullivan of SOM.

The problems relative to the auditorium's egress were discussed and resolved. WT/ED will submit for our final review a comprehensive letter detailing these resolutions, along with the appropriate drawings.

Paul S. Cooper
TCRU/Design Standards
Supervisor

cc: G. Breiding, O. Clemente, A. Coras, V. Dovletian, E. Fasullo, A. Hood, S. Johnson, R. Linn, A. Rohssler, L. Sanchez, J. Vinciguerra

THE PORT AUTHORITY

World T[illegible] & Economic Development Department
[illegible]
One World Trade Center
New York, New York 10048

THE PORT AUTHORITY OF N Y & N J.
ENGINEERING DEPT., QUALITY ASSURANCE DIV
TENANT CONSTRUCTION REVIEW UNIT

NOV 18 1988

RECEIVED
NOTED: PRC #10688
REFERRED TO: [illegible]

November 16, 1988

Mr. Manuel Fernandez, V.P. Facilities Management
SALOMON BROTHERS, INC.
One New York Plaza
New York, NY 10004

RE: THE WORLD TRADE CENTER - SALOMON BROTHERS, INC.
- WT-2035 - CONTRACT WTC 597.004 - TCA 7004

Dear Mr. Fernandez:

In response to your letter of November 9, 1988, kindly be advised that the following additional structural documents have been approved for construction:

DWG. NO.	DATE	REV. NO.	TITLE
S-4	10/17/88	-	7th to 29th Fl. Framing Plan
S-5	"	-	30th Fl. Framing Plan
S-6	"	-	31st Fl. Framing Plan
S-7	"	-	32nd Fl. Framing Plan
S-8	"	-	33rd Fl. Framing Plan
S-9	"	-	34th Fl. Framing Plan
S-10	"	-	35th Fl. Framing Plan
S-11	11/7/88	1	36th Fl. Framing Plan
S-12	"	"	37th Fl. Framing Plan
S-13	"	"	38th Fl. Framing Plan
S-14	"	"	39th Fl. Framing Plan
S-15	"	"	40th Fl. Framing Plan
S-16	"	"	41st Fl. Framing Plan
S-17	"	"	42nd Fl. Framing Plan
S-18	"	"	43rd Fl. Framing Plan
S-19	"	"	44th Fl. Framing Plan
S-32	10/17/88	-	Typical Superstructure Details and General Notes
S-33	"	-	Typical Superstructure Details
S-34	"	-	Superstructure Sections

The above documents should be incorporated in the work recommended for approval in my earlier letter of October 18, 1988 and processed under the same TCA package for final approval - once you have signed these documents.

Also, I'm enclosing the official TCRU/DESIGN STANDARDS comments to your 10/17/88 submission which has been modified to reflect our understanding of our November 2 meeting.

Should you need additional clarification on the above, please contact me on 466-8566.

Sincerely,

L. Sanchez
WTC Planning Division

LS/ava
enc.
CC: T. Craig (Silverstein), T. Donovan, H. Jupiter (Silverstein), P. LaRocco, B. Linn, N. Lynch (Silverstein), P. Marchese
P. Cooper

SALOMON BROTHERS INC.; TAA W-7004
NOVEMBER 3, 1988
LOG ITEM NO. 6

Subject: FIRST MAJOR CONTRACT DOCUMENT SUBMISSION

Reference: Review Request dated 10/18/88

1. The review memorandum for the subject submission was completed on October 31, 1988. Due to the extent and nature of the comments and the resultant recommendation to withhold approval, I suggested through Bob Linn's office that a meeting be held with the Line Department, the Tenant and his Consultants, and TCRU/Design Standards, to discuss the comments. The intent of such discussion was to see if any of the comments could be resolved, and the review memorandum's recommendation be modified from "approval withheld" to "approval subject to", prior to its distribution.

   The meeting was held on November 2, 1988 and attended by: Mssrs. P. Cooper and V. Dovletian TCRU/Design Standards; L. Sanchez and E. McNierney - WT/ED Planning; D. Sullivan - S.O.M.; J. Beech - Flack & Kurtz; J. Bhatia - Syska & Hennessy; and M. Fernandez - Salomon Brothers.

2. The results of the meeting were:

   a. The Consultants collectively indicated that the general intent of this submission was to gain approval on its structural aspects, and that although the architectural, mechanical and electrical comments were valid, the information that would have answered these comments was scheduled to appear on the contract documents in subsequent submissions.

   b. That the review memorandum would be issued with the comments remaining as is, with the recommendation of "approval withheld" remaining, and that a remark would be added to the memorandum indicating that the review found no reason to withhold approval on the submission's structural portion.

   c. That the Consultants would not be required to resubmit modified documents in response to our comments, but would provide a comprehensive written response.

   d. That a written description addressing specific outstanding comments would accompany all future submissions.

   e. That a more comprehensive egress analysis would be provided.

3. It is worth noting that an additional rider is attached to the above noted memorandum, pertaining to outstanding comments on the 2nd Floor auditorium, which resulted from a "pre-Salomon Brothers" review, and that because this auditorium is now intended for Salomon Brothers exclusive use, the comments must be resolved.

4. For the meeting's record I noted:

   a. That the revised proposed schedule of submissions discussed with WT/ED in early October gave no indication that structural approval was the goal of the first submission, and that the other disciplines' drawings were basically for information. Had this been made clear by the Consultants, several man-weeks of TCRU/Design Standard's time could have been more appropriately utilized elsewhere.

   b. That we should be informed at the beginning of all subsequent submissions of the Consultants' particular goals per submission.

Paul S. Cooper
TCRU/Design Standards
Supervisor

cc: Breiding, Clemente, Coras, Dovletian, Fasullo, Hood, Linn, Rohssler, Sanchez, Vinciguerra

SALOMON BROTHERS INC.; TAA W-7004
OCTOBER 20, 1988
LOG ITEM NO. 5

Subject: SUPPLEMENTAL DOCUMENT SUBMISSIONS

1. A second supplemental document submission was received by this office on October 20, 1988, and included the following:

   a. Specification for primary suspension members for ceilings (one page).
   b. Typical suspended ceiling details (three pages).
   c. Code Analysis for ceiling requirements (seven pages).
   d. Reference standard ceiling details (three pages).

   (Total = fourteen pages).

2. The first supplemental submission is noted in Log Item No. 3, Item Number 4 (copy attached).

3. Please note that supplemental submissions were not discussed at any of our preliminary job meetings, and may increase the review period.

4. I informed L. Sanchez of this supplemental submission matter, and asked that he require the Consultant(s) to provide complete non-fragmented document packages.

PSC/dm

cc: Breiding, Clemente, Coras, Dovletian, Hood, Linn, Rohssler, Sanchez, Vinciguerra

SALOMON BROTHERS INC.; TAA W-7004
OCTOBER 20, 1988
LOG ITEM NO. 4

Subject: CONSULTANT CONTACTS

SALOMON BROS
et. al.

Salomon Bros
747-7000
- o Manuel Fernandez

S. O. M.
309-9500
- o Don Sullivan
- o Warren Mathison
- o B. Armstrong

Office of Irwin Cantor
949-9150
- o Irwin Cantor
- o Akbar Tamboli

Syska & Hennessy
921-2300
- o Jesse Bhatia

Morse Diesel, Inc.
- o Rudy M. Pavesi
- o Stan Orr

FLACK & KURTZ
532-9600
- o Jack Beech

Silverstein Prop.
551-7367
- o Harold Jupiter
- o Arthur Miller
- o Neil Lynch

cc: Breiding, Clemente, Dovletian, Hood, Vinciguerra, Zwierz

SALOMON BROTHERS INC.; TAA W-7004
OCTOBER 19, 1988
LOG ITEM NO. 3

Subject: FIRST MAJOR MULTI-DISCIPLINE CONTRACT DOCUMENT SUBMISSION
Consultant Contact: None

1. The first major multi-discipline contract drawing submission was received by this office at 3:30 p.m. on October 18, 1988. The documents were dated in for schedule purposes on October 19, 1988.

2. The following drawings all apparently prepared by Electronic Systems Associates, bear neither the seal nor the signature of the Consultant-of-Record: C-7-29.1, C-30.1, C-31.1, C-32.1, C-33.1, C-34.1 and C-35.1.

3. At my request, Mr. Sanchez has agreed to immediately establish, and provide to me, a list of Consultant contacts (and back-ups) for each of this project's disciplines.

4. The following documents were received by this office at 3:30 p.m. on October 19, 1988:

   a. Structural calculations.
   b. Specifications for the contract drawings noted in item 1 above.
   c. Scope-of-work description of the project.

   These documents were dated for schedule purposes as October 20, 1988

PSC/dm

cc: Breiding, Clemente, Coras, Dovletian, Hood, Linn, Rohssler, Sanchez, Vinciguerra

SALOMON BROTHERS INC.; TAA W-7004
OCTOBER 17, 1988
LOG ITEM NO. 2

Subject: DEMOLITION/ELECTRICAL, MECHANICAL & PLUMBING
Consultant
Contact: None

1. Seal and signature missing from all drawings. P.S. Cooper informed L. Sanchez of this omission on Friday, October 14, 1988, indicating that the drawings could, therefore, not be approved. Sanchez said he will obtain them for us on Monday, October 17, 1988.

2. The emergency make-up water line to the 46th floor S.B.I. tanks is not part of the base building scheme. A water meter should be included, for this riser, on the construction plans and riser diagram(s) as per N.Y.C. Building code section P107.3.

AR, JPV, PSC/dm

cc: Coras, Linn, Rohssler, Sanchez, Vinciguerra

DRAFT

MEMORANDUM

To: Joseph L. Vanacore, Assistant Executive Director/Capital Programs
From: Phil LaRocco
Date: November 1, 1988
SUBJECT: SEVEN WORK TRADE CENTER - SALOMON BROTHERS INC. - PARTIAL APPROVALS PROCESS FOR BASE BUILDING MODIFICATIONS AND TENANT INITIAL FINISHES

Reference: Memo - S. Berger/All Department Directors dated 5/15/87 re: Construction Guidelines

Copy To:

Silverstein Properties, Inc., the developer of Seven World Trade Center, is in the process of finalizing a lease agreement with Salomon Brothers Inc. for approximately one million square feet of space in Seven World Trade Center. In order to expedite Salomon's occupancy of Seven World Trade Center, Salomon Brothers has made rapid approval of plans and drawings for both base building modifications and initial tenant finishes a part of the tripartite agreement between Salomon, Silverstein and the Port Authority.

The agreement provides that the Port Authority will have 20 working days to review partial submissions for code and structural integrity requirements. The Engineering Department has agreed to this time period. If the Port Authority does not complete its review within the 20 working days, the tenant will be allowed to proceed with construction. However, if the Port Authority after the 20th day, find any deviation from codes, the tenant will be obligated to correct such deviations immediately at no cost to the Port Authority.

In accordance with PAI 45-1.07.1, Structural Integrity - Tenant Buildings and Structures, and the above-referenced memo, it is recommended that approval be granted to have the Engineering Department Tenant Review Group approve all plans and construction drawings in sequential order.

Phil LaRocco
Director
World Trade & Economic Development

Concurred:

_____ Date: _____

Rino M. Monti
Director of Engineering
and Chief Engineer

Concurred:

_____ Date: _____

Patrick J. Falvey
General Counsel/Deputy Executive Director

Concurred:

_____ Date: _____

Joseph L. Vanacore
Asst. Executive Director/Capital Programs

THE PORT AUTHORITY OF NY & NJ

M E M O R A N D U M

To: Paul Cooper, Supervising Architect, Design Standards
From: Alvin S. Rohssler
Date: September 15, 1988
Subject: DESIGN STANDARDS REVIEW OF SALOMON BROTHERS TENANT CONSTRUCTION IN 7 WTC
LOG ITEM NO. 1

Reference: Memorandum, P. LaRocco to E. Fasullo, et al, dated 9/9/88

This memorandum is to state our unit's readiness to conduct a review of the subject tenant's construction, and to answer the concerns of the Line Department raised in the referenced memorandum.

Clearly, the PAI requires that our unit review plans for tenant construction and alterations on PA facilities and that we submit, to the Line Department, recommendations as to whether that department should allow construction to proceed.

Occupancies similar to that proposed, consisting of sublet private offices in a building operated by the building lessee, are common at other PA facilities, such as airports. Reviews of plans for such occupancies have been conducted by our unit as a matter of course, to the satisfaction of tenants and line departments alike.

The concerns raised by the referenced memorandum are, whether we can conduct a timely review, and whether the extent of our review will shift responsibility, from the tenant and its engineer of record, to the PA.

We stand ready to conduct a review within the time permitted us by the PAI, or to perform an expedited review where this application will take precedence over others submitted by the same Line Department. We have recent experience in the successful conduct of expedited reviews for Northwest Airlines, a large alteration at JFKIA, and are confident of our capability to do the same for Salomon Brothers. We would suggest that the writer of the referenced memorandum give further consideration to permitting this type of review. Our experience has shown us that judicious scheduling of submissions by the Line Department will permit the conduct of expedited reviews with a minimum of disruption to other tenants' review applications.

The fear that the extent of our review shifts responsibility is unfounded. Shifting responsibility, from the tenant and its engineering consultant, to the PA, is simply impossible. The tenant, in signing the Tenant Alteration Application, PA 531, agrees to indemnify and hold harmless the PA againt claims in connection with the performance of the work (paragraph 5). The engineering consultant, by law, cannot abrogate his or her professional responsibility. The PA, in requiring the tenant's consultant to correct the discrepancies brought out by our review, is indeed reinforcing that the consultant retains responsibility for the design.

The referenced memorandum appears to confuse tenant alteration reviews with what is termed the "PA design/build/operate situation". We agree that the review the Engineering Department would apply to a PA design would not be appropriate to a tenant design. It is the difference between a design engineer's office review of drawings before permitting their release, and a code compliance analysis. Matters of design prerogative will not be commented on in our review. As always, we will restrict our review to matters of code and life safety.

We believe that we can provide a review that is timely, thorough, and will satisfy the concerns of all parties involved. The apprehensions raised in the referenced memorandum are easily put to rest. We are experienced in handling similar jobs, and see no problem in undertaking this one.

Alvin S. Rohssler, P.E.
Engineer
Design Standards

THE PORT AUTHORITY OF N.Y. & N.J.

The World Trade Center
One World Trade Center
New York, New York 10048

THE PORT AUTHORITY OF N.Y. & N.J.
ENGINEERING DEPT. QUALITY ASSURANCE DIV.
TENANT CONSTRUCTION REVIEW UNIT

NOV 22 1988

RECEIVED
NOTED: PAC 28 NOV 88
REFERRED TO: YB Folder
(FILE W-7004/GENERAL CORRESPONDENCE)

November 18, 1988

Mr. Cornelius Lynch
Silverstein Properties
521 Fifth Avenue
New York, NY 10175

SUBJ: THE 7 WORLD TRADE CENTER LOBBY

Dear Neil:

At a meeting held in Silverstein's offices on November 16 with members of the WTED and P.A. Engineering Department and Skidmore, Owings & Merrill, it was mutually agreed by all that the Lobby of 7 World Trade Center will be defined as a "Lobby" and not as an "Atrium". It is my understanding that Skidmore, Owings & Merrill will be preparing a series of schematic sketches indicating the total population of the auditorium and locating the stairs and means of egress from that auditorium to the street and the 7 World Trade Center "Lobby".

Sincerely,

Robert D. Linn
Deputy Director for
Physical Facilities
World Trade & Economic Development

cc: Mr. Robert White
Salomon Brothers
Two New York Plaza
New York, NY 10004

bcc: P. Cooper, L. Sanchez

W-7004 - SALOMON BROTHERS - 7 WTC -
ELECTRICAL, HVAC AND PLUMBING
DEMOLITION : Floors 38, 40, 42 FOLDER #1.

NOVEMBER 21, 1988

SALOMON BROTHERS INC. 7 WORLD TRADE CENTER

2ND FLOOR AUDITORIUM CODE ANALYSIS - PLACE OF ASSEMBLY

POPULATION :264 persons

OCCUPANCY : F-1B

TRAVEL DISTANCES (TABLE 8-1)
-Maximum primary travel distance from seat to safe area : 100 feet
-Maximum secondary travel distance : 125 feet
-Minimum separation of exits : 25 feet

NUMBER OF PERSONS PER UNIT OF WIDTH (22")
-Aisles and cross aisles : 90 persons
-Exit doors from assembly space : 80 persons
-Exit doors from safe area : 125 persons
-Safe areas, corridors and exit passageways : 125 persons
-Minimum width of corridors : 44 inches
" " " Safe area (clear width) : 36 "

EXIT OPENINGS
-If net floor area. excluding stage area, is twelve (12) sq. ft. or more per person, exit from assembly space may be provided by exit openings of any class.
-If net floor area, excluding stage area, is less than twelve sq. ft. per person, exit from assembly space must be CLASS 1 only.
CLASS 1 - Exit openings that are used for normal entry to the assmbly space, and that open directly to a safe area or to an exterior space.
-WIDTH
- Single door - 44" min.
- Double door - 36" min., 88" max.
66"

EGRESS
-Existing stairs have a capacity of 150 persons each that exit to safe area on the third floor. One stair has a capacity of 120 persons and exits directly to the street level. TOTAL EXIT CAPACITY : 420 PERSONS

SAFE AREAS*
-Serve as a transition space in the line and direction of exit travel.
-Serve as normal entry to the assembly space and may be used as corridors, lobbies and lounges.
-Separation from other spaces by a two hour fire resistance rating.
-OCCUPANT LOAD - aggregate occupant load of all openings discharging directly into it.
-DIMENSIONS - Two sq. ft. per person (excluding furniture or equipment)
- Minimum dimension of unobstructed space - 8 feet.
- Height - 8'-0" min.

SALOMON BROTHERS INC. 7 WORLD TRADE CENTER

4TH FLOOR DINING CODE ANALYSIS

POPULATION : 450 (400 dining + 50 misc.)

OCCUPANCY: F-4

TRAVEL DISTANCES (TABLE 8-1)
-Maximum primary travel distance from seat to Safe Area: 127 feet*
-Maximum secondary travel distance : 187 feet*
-Minimun separation of exits : 25 feet
*distance has been increased by 50% in fully sprinklered bldg.
-When travel paths have more than two segments, travel distances shall be computed by the following:
1st and 2nd segments - measured distance
3rd segment - 1.25 times measured distance
4th segment - 1.40 times measured distance
5 or more segments - 1.25 times length of segments

- NUMBER OF PERSONS PER UNIT OF WIDTH (22")
-Aisles and cross aisles : 80 persons
-Exit doors from assembly space : 50 persons
-Exit doors from safe area : 100 persons
-Safe areas, corridors and exit passageways : 80 persons
-Minimun width of corridors : 44 inches

EXIT OPENINGS
-If net floor area, is twelve (12) sq. ft. or more per person, exit from assembly space may be provided by exit openings of any class.
-If net floor area, is less than twelve sq. ft. per person, exit from assembly space must be CLASS 1 only.
CLASS 1 - Exit openings that are used for normal entry to the assembly space, and that open directly to a safe area or to an exterior space.
-WIDTH
-Single door - 44" min. (36" min. if population is below 300)
-Double door - 36" min., 88" max.

EGRESS
-Existing stairs have capacity of 150 persons each (total 300).
(distance and layout may create problems in using both stairs.)
SAFE AREAS
-Serve as a transition space in the line and direction of exit travel.
-Serve as normal entry to the assembly space and may be used as corridors, lobbies and lounges.
-Separation from other spaces by a two hour fire-resistance rating.
-OCCUPANT LOAD - aggregate occupant load of all openings discharging directly into it.

SEATING

-If area is less than 12 sq. ft. per person, chairs must be attached.
-If area is between 8 and 12 sq. ft. per person, movable chairs may be used provided all chairs in a row are ganged. Not more than twelve chairs between aisles.
-All chairs placed on stepped platforms less than 4'-0" wide shall be anchored.
-Minimum distances between centerlines of chairs in any row : 19"
-Spacing between the back of one chair in any row and any part of the chair behind it shall be at least 12" but is increased by the following reasons:

a) DIFFERENCES IN LEVEL (IN.)	INCREASE IN SPACE (IN.)
6-10	1"
11-16	2"
17-22	3"
23+	4"

b) where it is necessary to pass more than seven (7) chairs to reach the nearest aisle, spacing shall be increased by 1/4" for each chair in excess of seven (7).

-Not more than eight (8) chairs shall be provided in any row of seating having access to only one aisle.
-Performance viewing for wheelchair positions (Local Law 58)

CAPACITY	NUMBER OF POSITIONS
75-100	4 min.
101-150	5 min.
151-200	6 min.
201-300	7
301-400	8
401-500	9
500-1000	2% of total

AISLE SLOPES

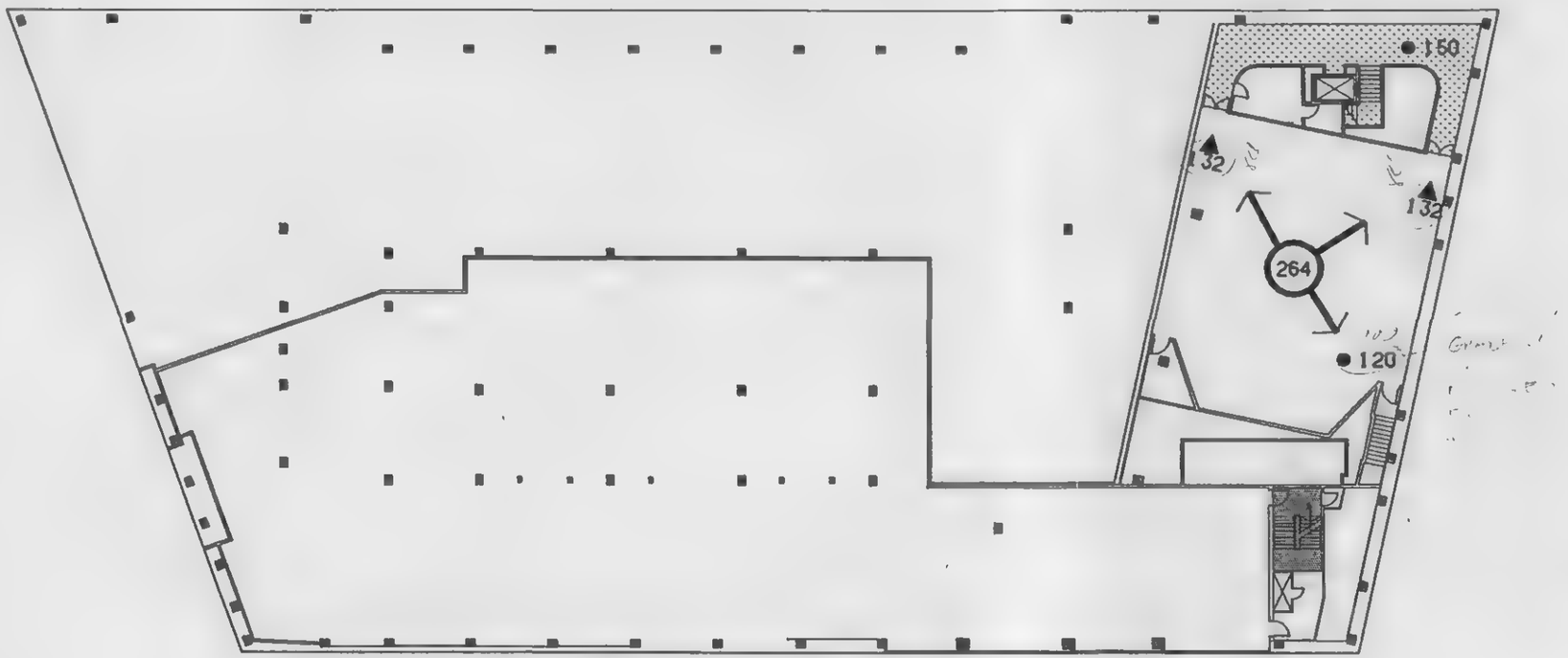
-Maximum 1:8
-Steps
  a) When single riser is used between levels, riser is 8" or less.
  b) No riser may be less than 4"
  c) When more than one (1) riser is used, riser is 7 3/4" or less.
  d) Width of treads is between 9 1/2" and 10 1/2" (excluding nosings).

* The safe area for the second floor auditorium begins on the 2nd floor and continues to the third floor, where it exits directly into the lobby. This configuration was designed by the base building architects. The third floor lobby provides direct access to grade.

-DIMENSIONS - Two sq.ft. per person (excluding furniture or equipment)
- Minimum dimension of unobstructed space - 8 feet.
- Height - 8'-0" min.

SEATING
-Table and Chair Seating:
Maximum distance of path between tables from any chair to an aisle leading to an exit is 18'-0".
The width of the path shall be at least 18" but may be reduced by 1" for each foot that the distance of the aisle is less than 18'-0" (min. width is 12").
Chairs with the front edge of the chair in line with the edge of the table shall not protrude into the path.

SUMMARY:
Egress has been accomplished by the addition of a supplemental stair with a capacity of 150 persons (exiting directly to lobby) and the use of two escalators with a capacity of 90 persons each.
TOTAL EXIT CAPACITY FROM DINING AREA : 480 PERSONS



2nd FLOOR (Auditorium Level)

SYMBOL KEY

(XX) OCCUPANT LOAD

XX LOAD ON EXIT ACCESS STAIR (PERSONS)

XX LOAD AT EXIT DOOR (PERSONS)

○ XX TOTAL LOAD ON EXIT STAIR (PERSONS)

● XX CAPACITY OF EXIT STAIR (PERSONS)

SAFE AREA — 264 PEOPLE AT 2 SQ. FT. /PERSON = 528 SQ. FT. MIN.

OCCUPANCY LOAD BY DESIGN

AUDITORIUM 264

EXIT CAPACITY

1 ACCESS STAIR TO SAFE AREA AT 2 1/2 UNITS (60 PERSONS/UNIT) = 150

1 STAIR AT 2 UNITS (60 PERSONS/UNIT) = 120

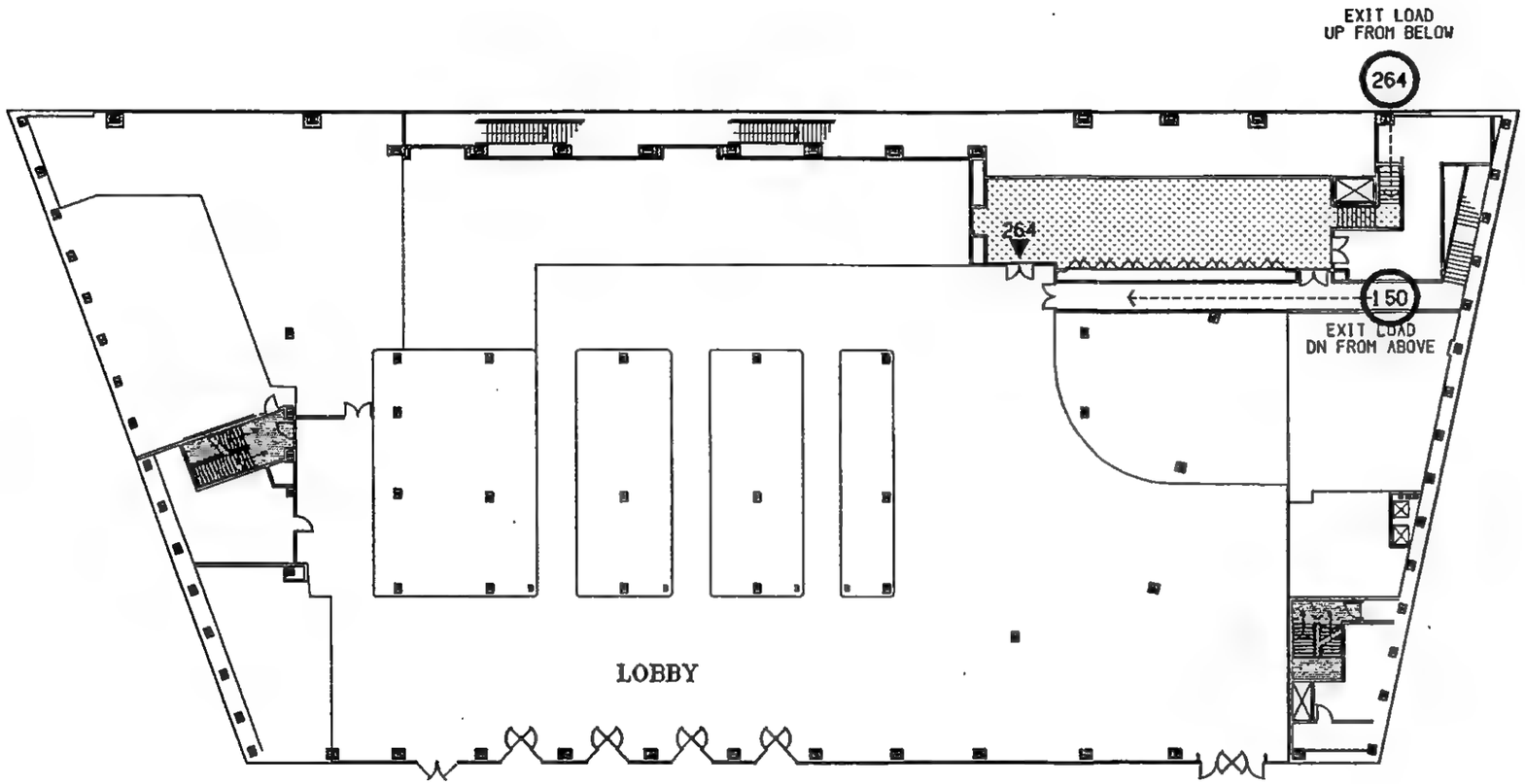
TOTAL EXIT CAPACITY = 270

THE PORT AUTHORITY OF N.Y. & N.J.
ENGINEERING DEPT., QUALITY ASSURANCE DIV.
TENANT CONSTRUCTION REVIEW UNIT
DEC 14 1988
RECEIVED (5)
NOTED: W-7004
REFERRED TO: Record copy

PRELIMINARY

REV. 11/21/88

Salomon Brothers Inc 7 WORLD TRADE CENTER HEADQUARTERS	SOM	SKIDMORE, OWINGS & MERRILL ARCHITECTS / ENGINEERS 220 East 42nd St, New York, N.Y. 10017	2ND FLOOR- EGRESS DIAGRAM	16 SEPT 88 1/32" = 1'-0"	SK-1005



SYMBOL KEY

(XX) OCCUPANT LOAD

XX LOAD ON EXIT ACCESS STAIR (PERSONS)

XX LOAD AT EXIT DOOR (PERSONS)

○ XX TOTAL LOAD ON EXIT STAIR (PERSONS)

● XX CAPACITY OF EXIT STAIR (PERSONS)

SAFE AREA

(264 PEOPLE X 2 SQ. FT. = 528 SQ. FT. MINIMUM REQUIRED

NOTE:
SBI SPACES EXIT TO LOBBY WHICH PROVIDE DIRECT ACCESS TO GRADE

3rd FLOOR (Plaza Level)

PRELIMINARY

REV. 11/21/88

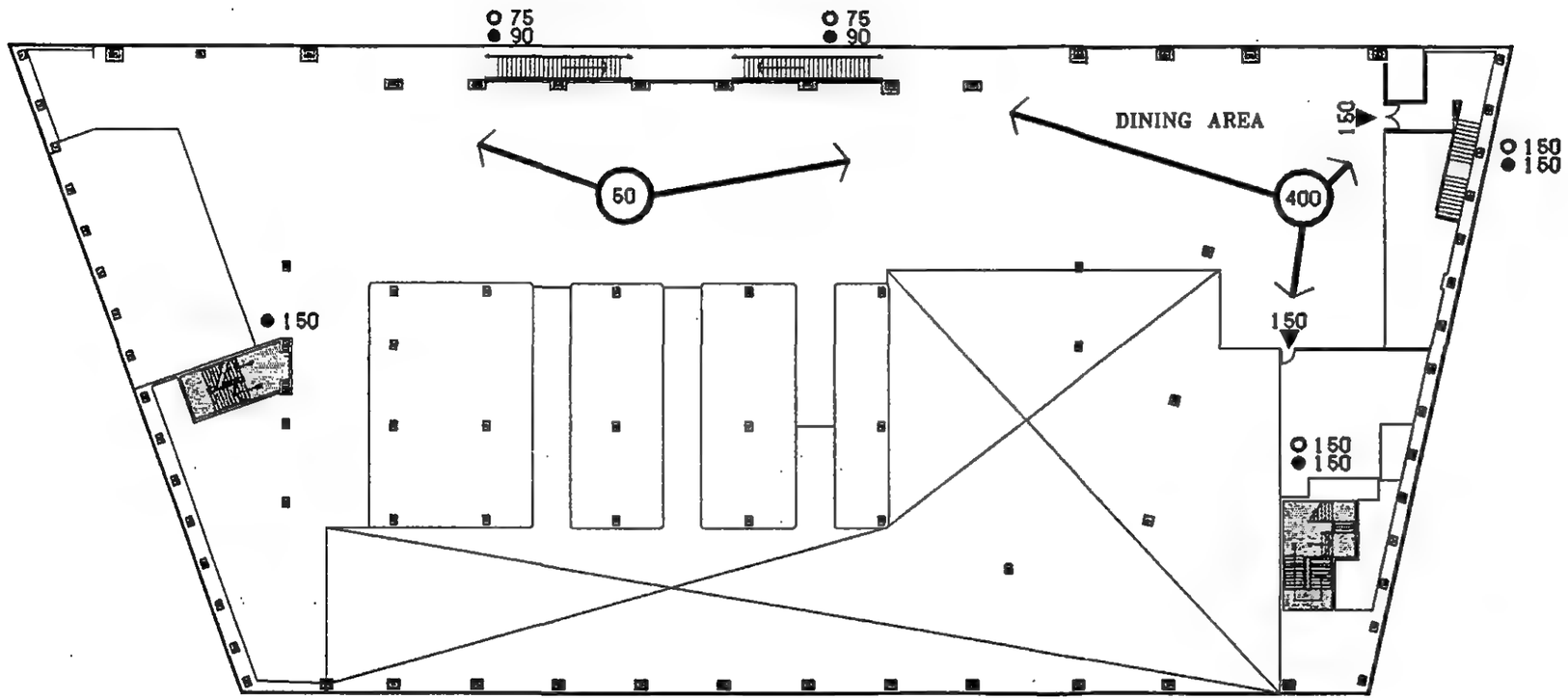
Salomon Brothers Inc
7 WORLD TRADE CENTER HEADQUARTERS

SOM SKIDMORE, OWINGS & MERRILL
ARCHITECTS / ENGINEERS
220 East 42nd St, New York, N.Y. 10017

3RD FLOOR- EGRESS DIAGRAM

15 SEPT 88
1/32" = 1'-0"

SK-1006



4th FLOOR (Cafeteria)

SYMBOL KEY

- (XX) OCCUPANT LOAD
- XX LOAD ON EXIT ACCESS STAIR (PERSONS)
- XX LOAD AT EXIT DOOR (PERSONS)
- O XX TOTAL LOAD ON EXIT STAIR (PERSONS)
- ● XX CAPACITY OF EXIT STAIR (PERSONS)
- SAFE AREA

OCCUPANCY LOAD BY DESIGN

DINING	400
STAFF	50
TOTAL	450

EXIT CAPACITY

2 STAIRS AT 2 1/2 UNITS (60 PERSONS/UNIT) = 300

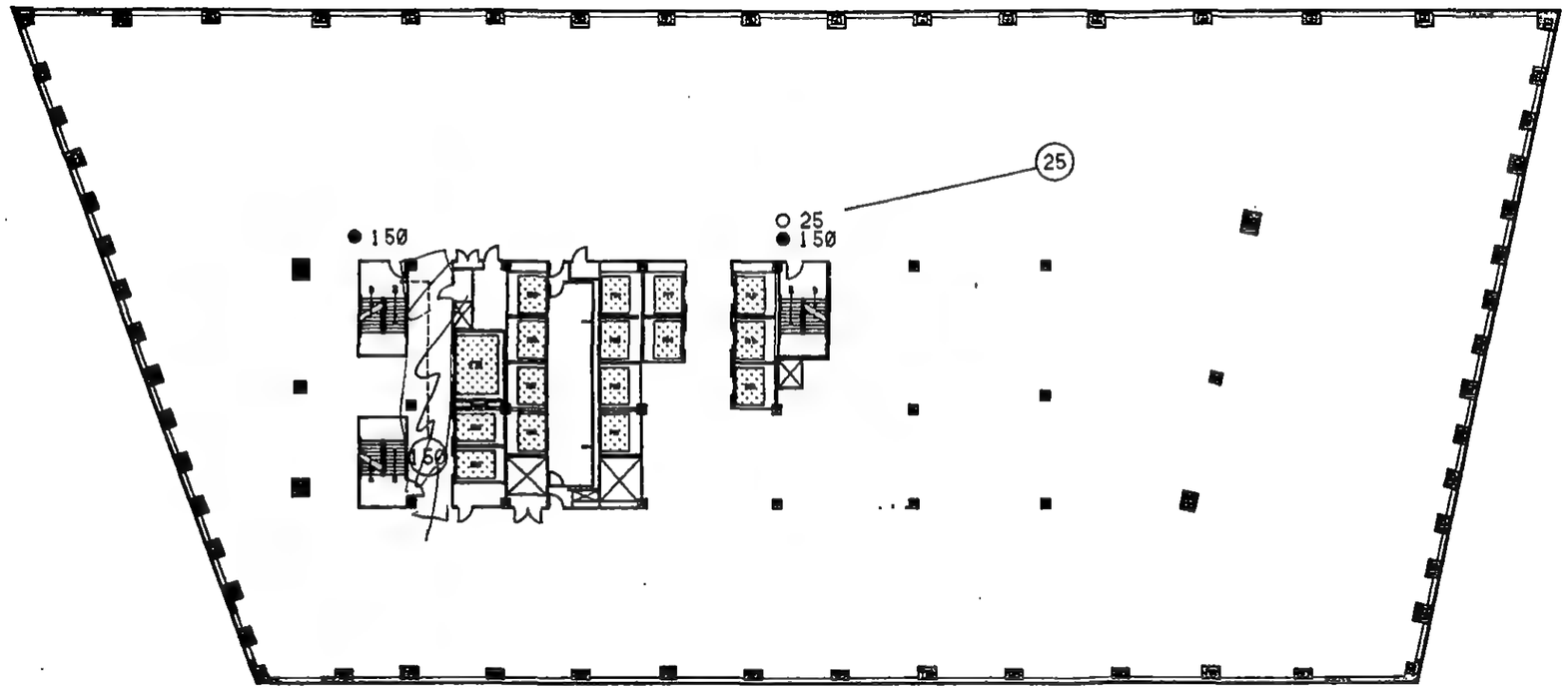
1 NEW STAIR AT 2 1/2 UNITS (60 PERSONS/UNIT) = 150

2 ESCALATORS AT 1 1/2 UNITS EACH (60 PERSONS/UNIT) = 180

TOTAL	630
TOTAL FROM DINING AREA	450

PRELIMINARY

Salomon Brothers Inc 7 WORLD TRADE CENTER HEADQUARTERS	SOM SKIDMORE, OWINGS & MERRILL ARCHITECTS / ENGINEERS 220 East 42nd St., New York, N.Y. 10017	4TH FLOOR- EGRESS DIAGRAM	16 SEPT 88 1/32" = 1'-0"	SK-1007



35th FLOOR

SYMBOL KEY

(XX) OCCUPANT LOAD

XX LOAD ON EXIT ACCESS STAIR (PERSONS)

XX LOAD AT EXIT DOOR (PERSONS)

O XX TOTAL LOAD ON EXIT STAIR (PERSONS)

● XX CAPACITY OF EXIT STAIR (PERSONS)

SAFE AREA

OCCUPANCY LOAD BY DESIGN

TECHNOLOGY SUPPORT	25
SUPPLEMENTAL STAIR FROM ABOVE	150

EXIT CAPACITY

2 STAIRS • 2 1/2 UNITS (60 PERSONS/UNIT) = 300

PRELIMINARY

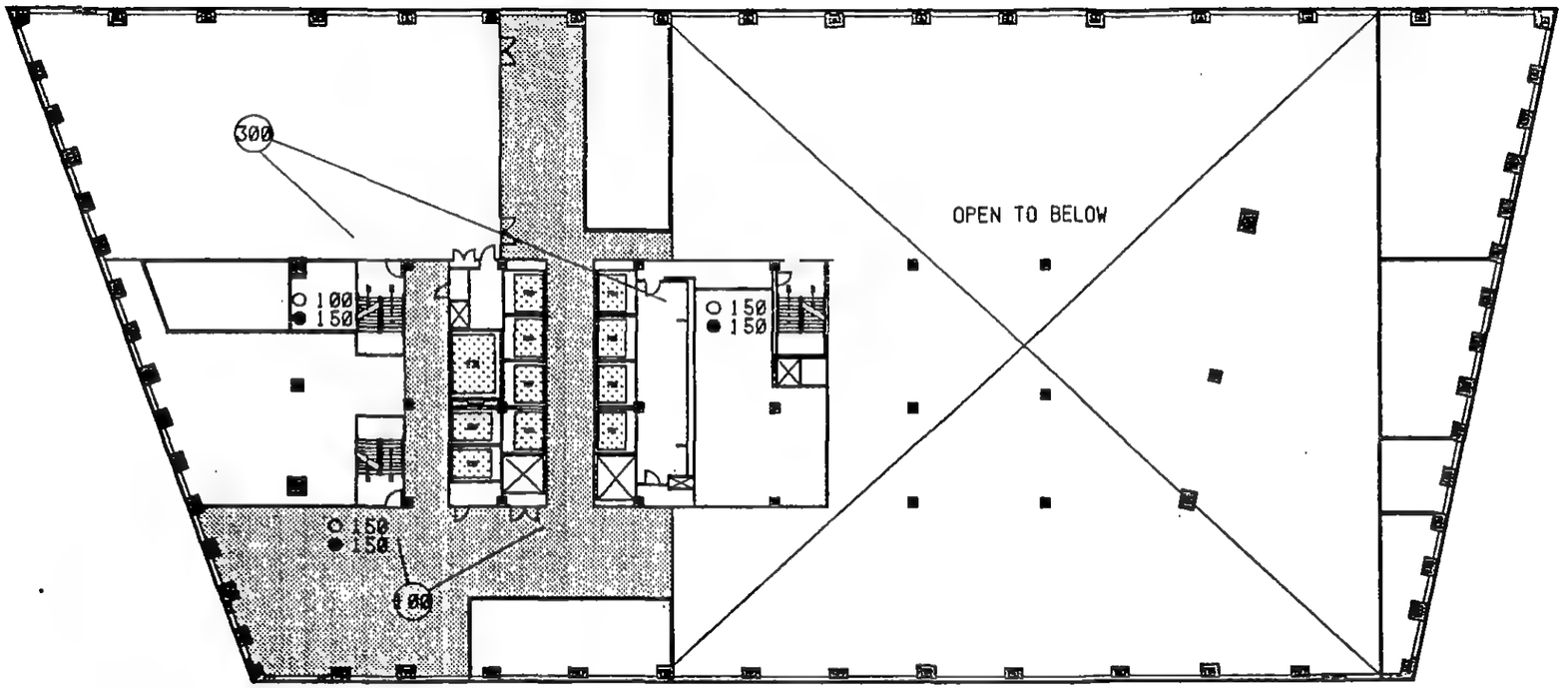
Salomon Brothers Inc
7 WORLD TRADE CENTER HEADQUARTERS

SOM SKIDMORE, OWINGS & MERRILL
ARCHITECTS / ENGINEERS
220 East 42nd St, New York, N.Y. 10017

35TH FLOOR- EGRESS DIAGRAM

16 SEPT 88
1/32" = 1'-0"

SK-1008



39th FLOOR

SYMBOL KEY

(XX) OCCUPANT LOAD

XX LOAD ON EXIT ACCESS STAIR (PERSONS)

XX LOAD AT EXIT DOOR (PERSONS)

○ XX TOTAL LOAD ON EXIT STAIR (PERSONS)

● XX CAPACITY OF EXIT STAIR (PERSONS)

SAFE AREA

OCCUPANCY LOAD BY DESIGN

AUDITORIUM	300
SUPPORT	100
TOTAL	400

EXIT CAPACITY

2 STAIRS AT 2 1/2 UNITS (60 PERSONS/UNIT) = 300

1 SUPPLEMENTAL STAIR AT 2 1/2 UNITS (60 PERSONS/UNIT) = 150

TOTAL EXIT CAPACITY = 450

PRELIMINARY

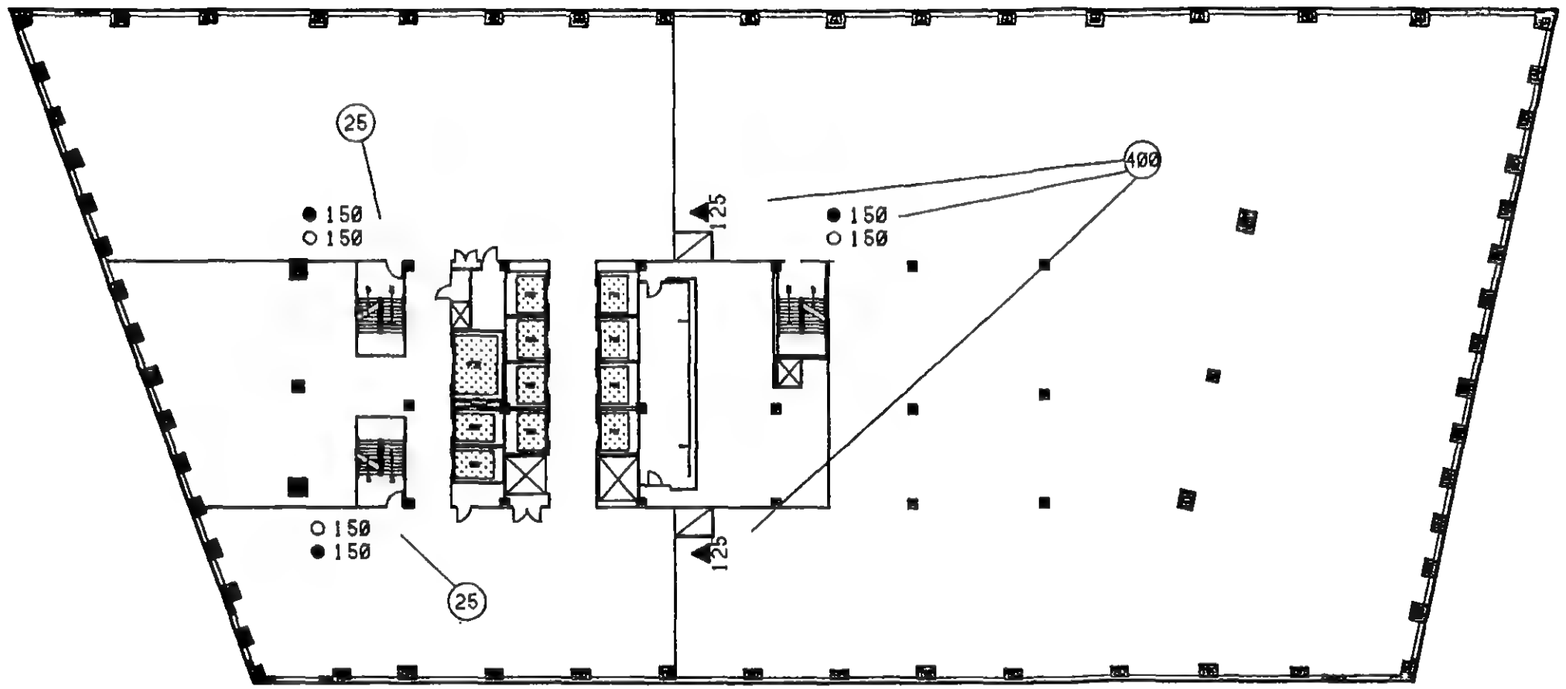
Salomon Brothers Inc
7 WORLD TRADE CENTER HEADQUARTERS

SOM SKIDMORE, OWINGS & MERRILL
ARCHITECTS / ENGINEERS
220 East 42nd St, New York, N.Y. 10017

39TH FLOOR- EGRESS DIAGRAM

16 SEPT 86
1/32" = 1'-0"

SK-1009



40th FLOOR

SYMBOL KEY

(XX) OCCUPANT LOAD

XX LOAD ON EXIT ACCESS STAIR (PERSONS)

XX LOAD AT EXIT DOOR (PERSONS)

○ XX TOTAL LOAD ON EXIT STAIR (PERSONS)

● XX CAPACITY OF EXIT STAIR (PERSONS)

SAFE AREA

OCCUPANCY LOAD BY DESIGN

TRADERS	400
SUPPORT	50
TOTAL	450

EXIT CAPACITY

2 STAIRS AT 2 1/2 UNITS (60 PERSONS/UNIT) = 300

1 SUPPLEMENTAL STAIR AT 2 1/2 UNITS (60 PERSONS/UNIT) = 150

TOTAL EXIT CAPACITY = 450

PRELIMINARY

Salomon Brothers Inc
7 WORLD TRADE CENTER HEADQUARTERS

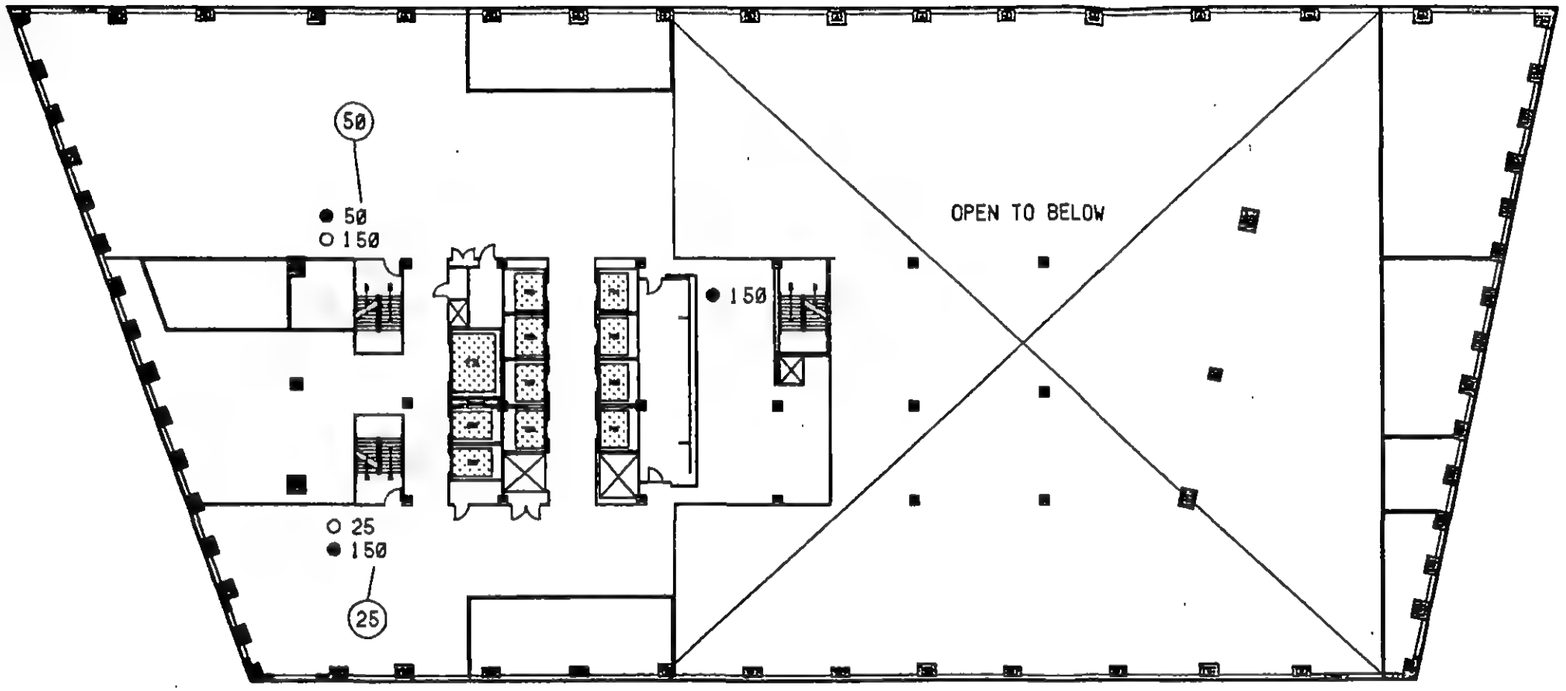
SOM SKIDMORE, OWINGS & MERRILL
ARCHITECTS / ENGINEERS
220 East 42nd St., New York, N.Y. 10017

40TH FLOOR- EGRESS DIAGRAM

15 SEPT 88

1/32" = 1'-0"

SK-1010



41st FLOOR

SYMBOL KEY

(XX) OCCUPANT LOAD

XX LOAD ON EXIT ACCESS STAIR (PERSONS)

XX LOAD AT EXIT DOOR (PERSONS)

○ XX TOTAL LOAD ON EXIT STAIR (PERSONS)

● XX CAPACITY OF EXIT STAIR (PERSONS)

SAFE AREA

OCCUPANCY LOAD BY DESIGN

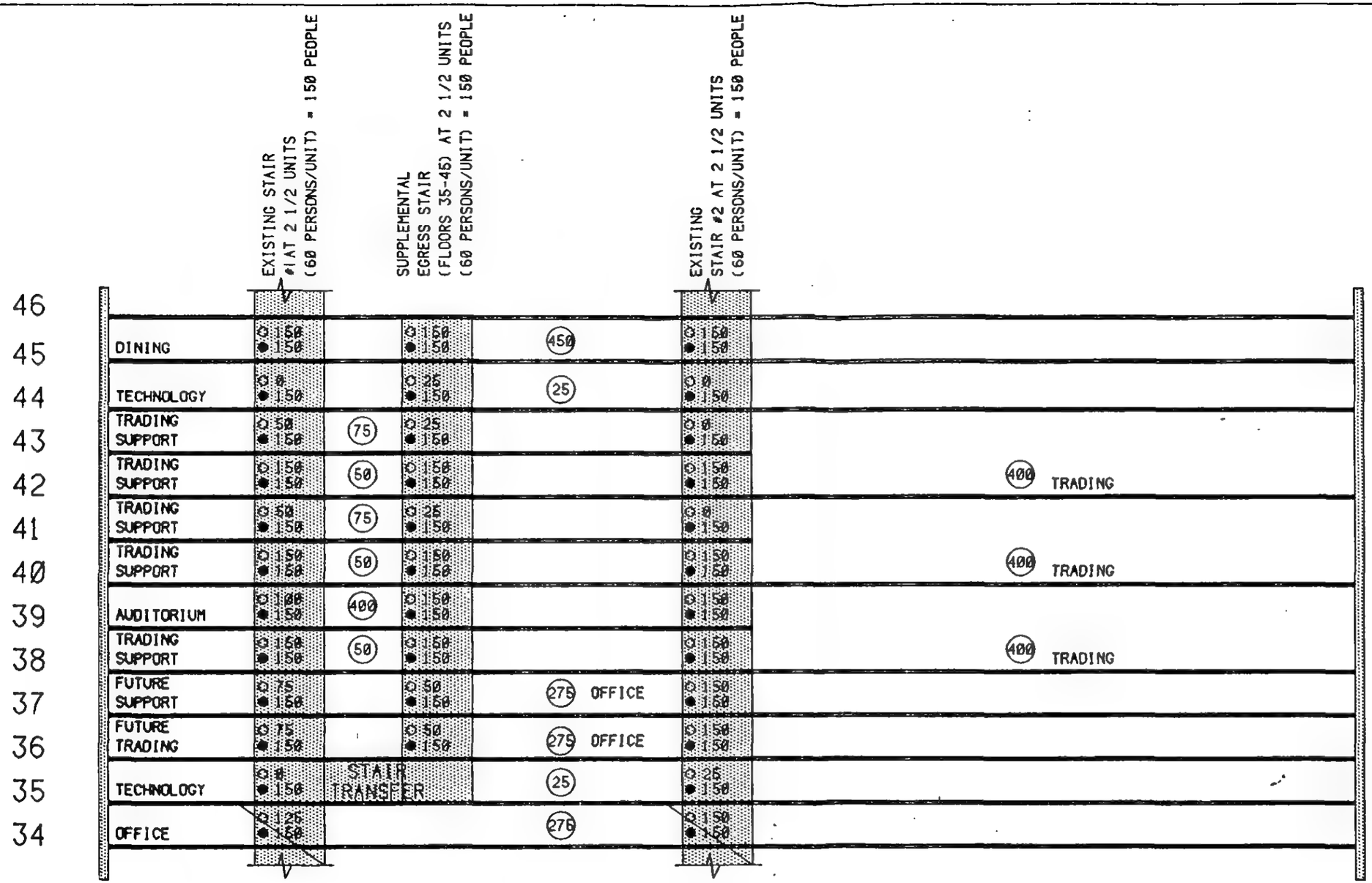
SUPPORT	75

EXIT CAPACITY

3 STAIRS AT 2 1/2 UNITS (60 PERSONS/UNIT) = 450

PRELIMINARY

Salomon Brothers Inc 7 WORLD TRADE CENTER HEADQUARTERS	SOM	SKIDMORE, OWINGS & MERRILL ARCHITECTS / ENGINEERS 220 East 42nd St., New York, N.Y. 10017	41ST FLOOR- EGRESS DIAGRAM	15 SEPT 88 1/32" = 1'-0"	SK-1011



PRELIMINARY

Salomon Brothers Inc
7 WORLD TRADE CENTER HEADQUARTERS

SOM SKIDMORE, OWINGS & MERRILL
ARCHITECTS / ENGINEERS
220 East 42nd St. New York, N.Y. 10017

SECTION-EGRESS DIAGRAM

15 SEPT 88
N.T.S.

SK-1012

JOB: SOLOMON BROTHERS
BASE BUILDING MODIFICATIONS
7 WTC

DWG. TITLE:
BEAM MARKS

W-7004

Continued

in Folder #2

THE PORT AUTHORITY OF NEW YORK & NEW JERSEY

M E M O R A N D U M

To: Mr. R. Linn, Deputy Director for Physical Facilities, WT&ED
From: Ennala Ramabhushanam
Date: April 24, 1989
Subject: WTC - ALTERATION APPLICATION #W-7004 - SALOMON BROTHERS - 7 WTC - BASE BUILDING MODIFICATIONS

Reference: Tenant Alteration Review Request, dated 4/10/89

Copy To: L. Sanchez A. Vaccaro Job Folder
Chrono Folder

A review of the material submitted with the referenced request for the subject application has been made.

It is recommended that approval to proceed be given subject to the submission of the items listed below being revised in accordance with the eighteen (18) requirements listed on the attached rider.

REMARKS: See the attachment for the list of drawings for the architectural, structural, electrical and plumbing work of "Base Building Modification" stage of the project.

Please note that this qualified approval does not extend to the heating, ventilating and air-conditioning drawings.

Ennala Ramabhushanam

Ennala Ramabhushanam, P.E.
Manager
Quality Assurance Division

JPV/dm
att.

RIDER

ALTERATION APPLICATION #W-7004

ARCHITECTURAL

1. Dwg. #A-200, Toilet Plan and Details. Verify that depth of toilet stalls for handicapped use complies with ANSI A117.1-1986. (Repeat comment)

2. Regarding use of non-fire-retardant wood, please clarify the specific locations which qualify for the use of such wood as per limitations enumerated in the N.Y.C. Building Code Section C26-504.8.

3. Specification #07275 - Sprayed-on Fireproofing. On the drawings, indicate the fire protection rating in hours required for the new structural members based on Table 3-4 of the Building Code.

   When the sprayed-on fireproofing has been selected, indicate the thickness and density required to attain the hourly rating for each structural element. (Repeat comment)

ELECTRICAL

4. Dwgs. #E-R1, E-R2. Submit short-circuit calculations and tabulation of short-circuit ratings for buses, fuses, switches, and circuit breakers, with corresponding values of short-circuit current. N.Y.C. Electrical Code sections 27-3047 (B30-44.0), 27-3048 (B30-44.1), 27-3067 (B30-59.0); NEC sections 110-9, 110-10. (Repeat comment)

5. Code Analysis, re: response to comment numbers 8 through 21 of Quality Assurance Division memo dated 12/5/88. Submit revisions conforming with the response. (Repeat comment)

6. Specifications, p. 16002, part B-2. Delete THWN wire insulation, and substitute a non-PVC type. (Repeat comment)

7. Code Analysis, re: response to comment number 22 of Quality Assurance Division memo dated 12/5/88. PVC wiring is prohibited indoors, even if run in conduit. (Repeat comment)

MECHANICAL

*8. Dwg. #HVAC-1. For the new underground fuel oil tank and piping indicated on the drawing, provide design details as required to demonstrate conformance with all applicable provisions of Subchapter 14, Article 17 of the N.Y.C. Building Code, as well as 6NYCRR part 614: Standards for New and Substantially Modified Petroleum Storage Facilities. In contract documents please specifically address:

secondary containment to collect and contain fuel leaks, leak monitoring system, anticorrosive protection of the tank and all associated underground piping, as well as pressure testing and inspection procedures. Please note that design details shown on Dwgs. #S-33 and HVAC-54 are contradictory and neither of them meets code requirements for the secondary containment of the potential fuel leak. (Modified repeat comment)

Consultant's reply has been noted but could not be verified in materials submitted for review.

9. Dwgs. #HVAC-2, HVAC-3 and HVAC-4. Provide and show on plans a separate dedicated shaft for the fuel oil risers in conformance with N.Y.C. Building Code, Section C26-1416.3.(f)5 (Repeat comment)

The above drawings have not been resubmitted for review, therefore, consultant's reply could not be verified.

10. Dwgs. #HVAC-5 and #HVAC-6. Since outside air intakes on the west side of the floors shown on these drawings are in proximity of the existing Con Edison Substation venting louvers they shall be inactivated in the event of a substation fire in order to prevent the fire and its combustion products to be drawn into the building. See N.Y.C. Building Code RS 13-1, Sections 2-3.4.3 and 3-3.6. (Modified repeat comment).

As an alternate to shutting down of these forced draft outside air intake louvers, discussions between Port Authority personnel and the tenant's consultants at the meeting of 3/21/89 suggested an arrangement of the combustion air flow coupled with the sequencing of the forced outside air intake fans to safeguard the maintenance of a pressure differential sufficient to protect against the spread of smoke from the emergency generator floor to the remainder of the building.

11. Dwgs. #HVAC-46 and #HVAC-47. Where 26 x 8 and 16 x 8 toilet exhaust ducts penetrate shaft walls, provide fire dampers and access doors in conformance with RS 13-1, Section 3-3.2.2. Also, on Dwg. #HVAC-47, provide fire damper and access door in toilet and elevator machine room exhaust ducts where they exit a duct shaft. (Repeat comment)

*12. Dwgs. #HVAC-48 and HVAC-49. For all new air handling units, provide and show on plans the physical locations of duct mounted smoke detectors in conformance with RS 13-1, Section 4-3. In addition - for all air handling units with capacities greater than 15,000 CFM - provide the protection against combustion of air filter systems in conformance with requirements of RS 13-1, Section 2-4.1.2. (Modified repeat comment).

Although there are several large air handling units shown on these drawings, consultant's response addresses only one of them. (O.A. Unit).

13. Dwg. #HVAC-53.1. With regard to the modification of the building smoke control system, please coordinate the system's diagrams on this drawing with the plans and sections shown on other mechanical drawings, and also please clarify the submitted Smoke Control Sequence of Operations so it correlates with the coordinated drawings and symbols used in them to reflect the design intent in a fully comprehensive manner. Please note that on plans the minimum outdoor air shaft is also indicated as a smoke purge shaft during a fire alarm condition in the building and, therefore, it is not clear from the submitted sequence of operation whether the design calls for the supply of the make-up air to, or the exhaust of the smoke contaminated air from the central core MER through the minimum outdoor air opening.

14. Dwg. #HVAC-54.1, Typical Fire Damper Detail. With regard to fire damper sleeve, please note that WTC design criteria reflected in standard details given to all tenants call for the sleeve to be of the same gauge as the ductwork to which it fastens, with a minimum of 16 gauge for high velocity and ductwork and all other rectangular ductwork up to 36-inches wide. For ductwork above 36-inches wide, the sleeve shall be 14 gauge.

15. For all air handling systems, provide detailed sequences of operations, illustrated by air flow diagrams, if necessary, to demonstrate conformance with all provisions of the Code Section C26-1300.8, RS 13-1, Sections 2-4.1.2, 4-3, and 4-3.1 in connection with the control of smoke spread through the air handling systems. Also please describe all required interfacings between air handling systems and the existing Class E fire alarm and communication system in the building. (Repeat comment)

Consultant's responses to the following comments have been noted but they could not be verified in the materials submitted for review. Therefore, these comments are restated.

16. Design Guidelines VIII, Minimum Standards for Construction in New York City, Engineering Requirements - HVAC:

a) Add the requirements for Smoke Control in conformance with Code Section C26-1300.8.

b) For "General Requirements and Construction Requirements of Fuel Oil Storage Tanks," add requirements of the New York State:

Department of Environmental Conservation - GNYCRR: Part 612, Part 613 and Part 614.

c) Revise NFPA 90-A, 1967 to NFPA 90-A, 1981.

d) Revise NFPA 96, 1964 to NFPA 96, 1984.

e) Revise ANSI-B9.1, 1971 TO ANSI-B9.1, 1978.

17. Specifications, Section 15502. 2.01.B.12.a. Specified thickness of diesel engine round exhaust pipe of 10 USSG is less than the 3/16 inch required by the Code Section C26-1501.14.(a).(2). Please revise.

18. Specifications, Section 15503.1.05.D. Provide specifications for thermal insulation of the round diesel engine exhaust pipe. Also, provide specifications for thermal insulations of kitchen exhaust ductwork and fans. See RS-13-3, Section 3-2.10.

042489

ATTACHMENT

TENANT ALTERATION APPLICATION #W-7004

The following is the list of drawings of the Base Building Modification Stage, recommended for approval:

Dwgs.	#D-1	revised	03/01/89
	#D-3	revised	03/01/89
	#D-4	revised	03/01/89
	#D-5	revised	03/01/89
	#D-6	revised	03/01/89
	#D-26	revised	03/01/89
	#D-31	revised	03/01/89
	#D-31P	revised	03/01/89
	#D-34	revised	03/01/89
	#D-35	revised	03/01/89
	#D-37	revised	03/01/89
	#D-38	revised	03/01/89
	#D-37P	revised	03/01/89
	#D-39	revised	03/01/89
	#D-41	revised	03/01/89
	#D-43	revised	03/01/89
	#D-44	revised	03/01/89
	#D-45	revised	03/01/89
	#D-46	revised	03/01/89
	#D-47	revised	03/01/89
	#D-48	revised	03/01/89
	#DS-1	revised	01/06/89
	#DS-2	revised	01/06/89
	#DS-3	revised	01/06/89
	#DS-1P	revised	01/03/89
	#DS-2P	revised	01/03/89
	#D-34P	revised	03/01/89
	#D-35P	revised	03/01/89
	#D-38P	revised	03/01/89
	#D-44P	revised	01/03/89
	#D-45P	revised	01/03/89
	#D-43P	revised	03/01/89
	#D-26E	revised	10/17/88
	#D-35E	revised	01/03/89
	#D-36E	revised	10/31/88
	#D-37E	revised	10/31/88
	#D-38E	revised	10/31/88
	#D-39E	revised	10/31/88
	#D-39P	revised	03/01/89
	#D-40E	revised	10/31/88
	#D-44E	revised	10/31/88
	#D-45E	revised	11/21/88
	#D-46E	revised	11/21/88
	#D-47E	revised	11/21/88

#D-27H	revised	12/19/88
#D-34H	revised	12/19/88
#D-35H	revised	01/03/89
#D-37H	revised	01/03/89
#D-38H	revised	01/03/89
#D-41P	revised	03/01/89
#D-45H	revised	01/03/89
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#D-47H	revised	01/03/89
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ELV-1	revised	12/19/88
E-R1	revised	04/03/89
E-R2	revised	04/03/89
E-R3	revised	03/01/89
E-R4	revised	03/01/89
E-5	revised	04/03/89
ES-1	revised	03/01/89
ES-2	revised	03/01/89
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E-48	revised	03/01/89
C-1	revised	03/01/89
C-2	revised	03/01/89

C-3	revised	03/01/89
C-4	revised	03/01/89
C-5	revised	03/01/89
C-6	revised	03/01/89
C-7	revised	03/01/89
C-29	revised	03/01/89
C-35	revised	03/01/89
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P-46	revised	03/01/89
P-47	revised	03/01/89
P-48	revised	03/01/89
P-49	revised	03/01/89

042489

SALOMON BROS.

24 APR 89 / MTG

TO DISCUSS: MEMO ER/RL, 24 APR 89

ATTENDING:

NAME	ORG.
PAUL S. COOPER	P.A., ENG., QA.
DAVID COOPER	F+K
EVAN Schneider	SBI
Don Sullivan	SOM
Varney Dovletian	PA/ENG/Q.A./TCRU
Andrew Lirieux	
Drew Daniels	F+K

File in
W-7004
Folder

MEMORANDUM

To: Mr. R. Linn, Deputy Director for Physical Facilities
From: Ennala Ramabhushanam
Date: April 12, 1989
Subject: 7 WTC - SALOMON BROTHERS - ELECTRICAL WIRING SPECIFICATIONS

Reference:
1) Buckslip, R. Linn to P. Cooper and T. Bell, dated 4/4/89
2) Letter, M. Fernandez (Salomon Bros.) to R. Linn, dated 4/3/89
3) Letter, D. Daniels (Flack and Kurtz) to M. Fernandez, dated 3/30/89.
4) Letter, B. Reinholtz (Morse Diesel) to M. Fernandez, dated 3/23/89
5) Letter, R. Linn to M. Fernandez, dated 2/2/89
6) Letter, R. Linn to M. Fernandez, dated 1/2/89.

Copy To: T. Bell, P. Cooper, E. Daly, V. Dovletian, M. Poliacof, A. Rohssler, L. Sanchez, A. Vaccaro, D. Wolf

This is response to your buckslip, Reference number 1, and is intended to assist you in the implementation of the Port Authority policy prohibiting the use of PVC insulation for electrical power lines within buildings in Port Authority and Tenant construction installations.

Salomon Brothers has taken an appropriate step in the direction of adhering to this policy by specifying non-PVC insulation for their vertical electrical risers, and have so indicated in Reference numbers 2 and 3. However, full adherence to the PVC insulation prohibition is required, and in this regard it may be helpful to mitigate their fears concerning the dollar premium they believe would be associated with such an installation.

The $215,000 estimate developed by Morse Diesel in Reference number 4, for additional costs for using XHHW instead of THWN is not fully substantiated. Their estimate comprises two numbers: first, $40,000 for 104,000 linear feet in the core and shell work; and second, $175,000 for Tenant space work, whose design is currently incomplete, and for which the estimate gives no quantity. Based on the former cost and quantity, the unit cost is $0.38 per linear foot. This unit cost is considered inaccurate for the following reasons:

1. If XHHW were used in a cable and conduit installation, for the core and shell, the additional material cost would be $0.03 - $0.05 per linear foot, while the labor cost is equivalent to the currently proposed installation. The resultant total cost differential should therefore not exceed ($5,000).

2. Alternatively, if MC cable with XHHW were used for the core and shell instead of AC cable with THWN and ground wire, the additional material cost would be $0.25 per linear foot. This will be offset by approximately one-half because of installation costs for the shorter lengths of MC cable. The resultant total cost differential, should not exceed $12,000.

3. If Morse Diesel's total estimate for the quantity of all work is correct, the application of the previous two wiring alternatives should produce cost differentials not exceeding $27,000 and $65,000, respectively.

Ennala Ramabhushanam

Ennala Ramabhushanam, P.E.
Manager
Quality Assurance Division

PSC/MP/dm

BUCKSLIP

TO: P. Cooper, T. Bell
FROM: Robert J. Linn
DATE: April 4, 1989
SUBJ: 7 WTC - SALOMON BROTHERS - ELECTRICAL WIRING SPECIFICATIONS

COPY TO: E. Daly, L. Sanchez, A. Vaccaro, D. Wolf

On January 2, 1989 I advised Mr. Fernandez of Salomon Brothers of our electrical cabling criteria. Attached is an April 3rd response from Mr. Fernandez advising of the fact that Morse Diesel, Salomon's construction manager, states that if they were to use an XHHW (non-PVC) insulation the cost premium is estimated at $215,000. You have previously advised me that the premium would not be extensive as stated by Morse Diesel. I would like your comments on this as soon as possible.

R. J. L.

Att.

Member of the New York Stock Exchange, Inc.

One New York Plaza
New York, N.Y. 10004 (212) 747-7000

Salomon Brothers Inc

RECEIVED

APR - 3 1989

PORT AUTHORITY OF N.Y. & N.J.
WORLD TRADE ECONOMIC DEV.
DEP. DIR. PHYS FAC.

April 3, 1989

Mr. Robert Linn
Deputy Director for Physical Facilities
World Trade & Economic Development
Port Authority of New York and New Jersey
One World Trade Center
New York, NY 10048

Re: 7 WTC - Electrical Wiring Insulation Specifications

Dear Bob:

In response to your 1/2/89 and 2/2/89 letters (attached) and other recent inquiries about electrical wiring insulation for our 7 WTC project, we have researched the issues involved and submit the following:

1. Our consultants advise that the New York City Building Code, the National Electrical Code and the National Fire Protection Association Code permit THWN (PVC) insulation in conduit for electrical riser and branch wiring. The above mentioned Codes are identified in our 11/23/89 Three-Party Agreement (Article 5.2.a) as the Codes with which compliance is required.

2. Although not required by Codes, we are voluntarily agreeing to provide XHHW (non-PVC) insulation on our vertical risers of 600 volts or less. This application will match the existing risers at 7 WTC and meet the Port Authority's request for a specification upgrade.

3. For branch circuit wiring we propose to specify THWN (PVC) insulation, which meets Code requirements and matches the existing branch circuit wiring at 7 WTC (please refer to Flack & Kurtz' 3/30/89 statement of Code compliance, attached). Morse Diesel has advised that changing the branch circuit insulation to XHHW (non-PVC) carries a cost premium estimated at $215,000 (please refer to Morse Diesel's 3/23/89 letter, copy attached).

We respectfully request approval of our electrical wiring specifications as per the above proposal.

Sincerely,

Manuel Fernandez

Manuel Fernandez
Vice President

atts.

cc: L. Sanchez
E. McNierney
V. Dovletian
P. Cooper
W. Mathison
D. Sullivan
J. Beech
D. Daniels
A. DeMeo
M. Simone
R. White/File (7-8800-02.000.8, 005.2)
E. Schneider
F. Edwards
R. PAVESI
B. REINHOLTZ

Flack + Kurtz
Consulting Engineers

475 Fifth Avenue
New York, NY 10017
212 532-9600

Chicago
Denver
San Francisco

March 30, 1989

RECEIVED
MAR 31 1989
FACILITIES MGMT.

Mr. Manuel Fernandez
Salomon Brothers, Inc.
Two New York Plaza
New York, New York 10004

Re: SBI @ 7WTC
Electrical Wiring Insulation
F+K Reference No. 88.22440.00

Dear Manuel:

As directed by SBI, we will specify electrical wiring insulation as follows:

1. Vertical Risers - 600 volts or less - XHHW:

   This application agrees with P.A. requirements and matches the existing building risers at 7 World Trade Center.

2. Branch Circuit Wiring - THWN:

   This application is consistent with the Electrical Code of the City of New York, National Electrical Code and matches existing branch circuit wiring at 7 World Trade Center.

Very truly yours,

FLACK + KURTZ Consulting Engineers

Drew Daniels, P.E.
Associate

DD/ksp

cc: E. Schneider - SBI
W. Mathison - SOM
B. Reinholtz - M/D
J. Beech - F+K

Morse Diesel

RECEIVED
MAR 27 1989
UTILITIES MGMT.

March 23, 1989

Mr. Manuel Fernandez
Salomon Brothers, Inc.
Two New York Plaza - 34th Floor
New York, NY 10004

Re: SBI - 7 World Trade Center
Electrical

Dear Mr. Fernandez:

The estimated quantity of branch wiring for Core and Shell only is approximately 104,000 L.F. of type THW. If XHHW branch wiring is required for branch circuitry the premium cost would be approximately $40,000.00.

The quantities of branch wiring required for the tenant portion of the work is monumental compared to the Core and Shell quantity

The writers best generic estimate is that there could be better than a $175,000 premium for XHHW wiring.

$21

Please be guided accordingly.

Very truly yours,

MORSE/DIESEL, INC.

Bennett Beinholtz
Vice President

/pa

cc: R. Pavesi
S. Orr
J. Berrioes
G. Burgess
J. Klein
E. Schneider

THE PORT AUTHORITY

February 2, 1989

Mr. Manuel Fernandez
Salomon Brothers Inc.
One New York Plaza
New York, NY 10004

RECEIVED
FEB 08 1989

Dear Manny:

Pursuant to our conversation of February 1, 1989, I am enclosing a second copy of the letter that we sent to you on January 2, 1989 dealing with the alteration electrical code requirements for your tenant alteration work in 7 World Trade.

In addition to this information, I think it is important for you to understand that the Port Authority policy is that all high voltage electrical lines should be using a cover of XHHW rather than the more common THHN which contains PVC. We have found that in ordering it in large quantities with advance notice there is very minimal cost difference in price. Port Authority policy is to use the XHHW which in case of a fire minimizes the production of poisonous fumes.

Sincerely,

Robert J. Linn
Deputy Director for
Physical Facilities
World Trade & Economic Development

Encl.

cc: L. Sanchez

cc: A. DeMeo
-M. Simone
-R. Samski
-W. Mathison
- D. Sullivan
J. Beech
D. Daniels
R. White
E. Schneid
File TWTC

The World Trade Center
New York, NY

The World Trade Center
One World Trade Center
New York, New York 10048

January 2, 1989

Salomon Brothers, Inc.
One New York Plaza
New York, New York 10004

Attn: Mr. Manuel Fernandez
Vice President

RE: 7 WTC - SALOMON BROTHERS, INC. - TENANT CONSTRUCTION ALTERATION ELECTRICAL CODE REQUIREMENTS

Dear Manuel:

As a follow up to our meeting circa December 21, 1988, we are herewith advising you that all electrical work performed in the above captioned project must conform with the requirements of the Building Code of the City of New York and the National Electrical Code in which the most stringent application of each Code shall prevail.

In the unlikely event that a unique condition will develop which is not specifically addressed by either Code, a determination will be made based upon sound engineering practice and the best life safety requirements for your leasehold.

Should you need any further guidance on this matter, kindly contact Mr. L. Sanchez, of my staff, at (212) 466-8566.

Sincerely,

Robert J. Linn
Deputy Director for
Physical Facilities
World Trade & Economic Development

cc: T. Donovan, P. LaRocco, L. Sanchez

bcc: G. Daly, R. Lachman, A. Vaccaro

PA 2127 4/10
1-85

TENANT ALTERATION REVIEW REQUEST

#

CHECK APPLICABLE ROUTING	ROOM NO.
Engineering (T.C.R.U.)	43NE
Risk Management – JSTC – Zip 43	6 FL
Operations Standards – JSTC – Zip 75	5 FL
Terminal Properties Div.	56S
Control Desk	
Facility Manager –	
Port Dept – Planning Div	64S
Aviation Technical Services Div.	65S
Air Terminal Properties Div.	
JFK – Business Administration – Zip 6	
NIA – Business Administration – Zip 19	
Marine Development & Rentals Div.	71E
Inspection & Safety	
Resident Engineer	
WTC CONSTRUCTION	38/10
L. SANCHEZ	
E. MC NIERNEY	
R. LINN	

Description of Work: P.A. WTC PLANNING PKG 13

BASE BUILDING MODIFICATIONS

DRAWINGS ARE DATED 4/3/89 - RESPONSES TO PREVIOUS P.A. COMMENTS

FACILITY 7 WTC

APPLICANT'S NAME SALOMON BR

APPLICATION NO W 7004

DRAWING NO(S). PER ATTACHED LIST

DATE 4, 10, 89

☑ You are requested to review the attached application and forward your comments to:

☐ Attached are revised drawings. Please review only those items on which exception was previously taken and send your comments to:

521 [redacted]	745	L SANCHEZ	8566
Org. Unit	Room No.	Contact	Ext.

No later than APRIL 24, 1989 PROJ. ADMIN. Title

If no reply is received by above date, your concurrence will be assumed unless arrangements have been made for additional time for review.

FOR USE OF REVIEWING DEPARTMENT

COMMENTS: (Use reverse side if necessary) Indicate next to each comment whether it is a condition or recommendation.

REFERENCES QAD (TCRU) COMMENT MEMOS DATED MARCH 13, 1989
MARCH 22, 198
MARCH 24, 1989

office copy

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
APR 10 1989
W-7004 (10)
ALTERATION APPLICATION

L. SANCHEZ

THANKS

(Please check applicable box)

☐ Approved ☐ Approved with Conditions and Recommendations Noted Above ☐ Disapproved with Requirements for Approval Noted Above ☐ Disapproved for Reasons Noted Above

Signature	Title	Date
		/ /

PKG 73
TO TCRC
4/10/8

ARCHITECTURAL RESPONSES TO PORT AUTHORITY COMMENTS DATED 3/22/89 AND 3/24/89

COMMENT 6.a. (3/22/89)

At all similar toilet rooms the depth of at least one of the two entrance vestibules shall be increased to comply with the requirements of ANSI A117.1-1986 regarding physically handicapped persons.

RESPONSE

See dwg. A-218, detail 14 dated 4/3/89.

COMMENT 6.c. (3/22/89)

At detail #5 establish size, spacing and anchoring of the indicated "steel channel posts" and the size and extent of the steel channel sill. (ANSI A117.1-1986) (Repeat comment)

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
APR 10 1989 (10)
W-7004
ALTERATION APPLICATION

RESPONSE

See dwg. A-200, Det. 5 dated 4/3/89

COMMENT 10.a (3/22/89)

Dwg. #A-3, Third Floor Plan:

Identify the function and occupancy classification of spaces where missing. Also identify the intended use of the long closet along the side of the "Lounge."

RESPONSE

See dwg. A-5 dated 4/3/89.

A. Item #19 reads as follows:

19. Specification #06100 - Carpentry. Revise specifications to require that all wood fastened to the building shall be treated to be fire retardant using the method prescribed in C26-502.6.

In Response:

The N.Y. City Building Code defines locations where fire retardant wood is required. Our Specifications are written to comply with N.Y. City Building Code requirements.

B. Item #20 reads as follows:

20. Specification #07200 - Building Insulation, extruded Polystyrene Board Insulation (Type 3). Provide documentation verifying compliance with the requirements for noncombustibility as defined in Article 2 of the Code.

In Response:

Polystyrene Board was erroneously included in the Building Insulation Section. The only use of Polystyrene Board is as a fill completely encapsulated between concrete slabs. We are revising our specification to exclude the Polystyrene Board from the Building Insulation Section and it will be included as fill in the Concrete Section.

C. Item #21 reads as follows:

21. Specification #07275 - Sprayed on Fireproofing. In the specifications or on the drawings, state the required thickness of fireproofing required for the various structural components to attain the fire resistance ratings required by Table 3-4 for the specific Construction Classification.

In Response:

Our Drawings erroneously omitted an indication of the fire hour rating requirements for new structural members. This fire rating is accomplished not only as a function of thickness, but density as well and varies from manufacturer to manufacturer. Specification Section 07250, Paragraph 3.02.B. stipulates the requirements for thickness and density as follows:

"B. Thickness and Density: Provide fireproofing thickness and density as may be required to fulfill the fire rating shown, or as required by governing authorities for the application shown.

1. Thickness Tolerance: Comply with UL listed tolerances.

2. Density Tolerance: No material shall have a density less than 5% below the required density."

#22

D. Item #23 reads as follows:

23. Specification #07350, Single Ply Roofing. Revise the specifications to include the requirement that roof coverings shall be class A or B as listed in RS 5-9, or as determined by tests made in conformance with RS 5-10 for those not listed see C26-503.7 (a). Provide verifying documentation.

In response:

We are revising specification section 07350 to require the roofing system to be Class A rated, and have verified that both manufacturers specified comply with these requirements.

COMMENT 1 (3/24/89)

Dwg. #A-3, Third Floor Plan. Clarify function and Occupancy Group of space south of Lounge #03-000. Provide information on partition type of the space. N.Y.C. Building Code Sections C26-301.2.

RESPONSE

See drawing A-3 dated 4/3/89.

* * *

#22

D. Item #23 reads as follows:

23. Specification #07350, Single Ply Roofing. Revise the specifications to include the requirement that roof coverings shall be class A or B as listed in RS 5-9, or as determined by tests made in conformance with RS 5-10 for those not listed see C26-503.7 (a). Provide verifying documentation.

In response:

We are revising specification section 07350 to require the roofing system to be Class A rated, and have verified that both manufacturers specified comply with these requirements.

COMMENT 1 (3/24/89)

Dwg. #A-3, Third Floor Plan. Clarify function and Occupancy Group of space south of Lounge #03-000. Provide information on partition type of the space. N.Y.C. Building Code Sections C26-301.2.

RESPONSE

Redundant

See drawing A-3 dated 4/3/89.

(Same Gas Pressure) Sheet

ELECTRICAL

COMMENT #28

Dwg. #E-47. Clarify means for connecting the 30 HP smoke exhaust fan to an emergency power source. NYC Building Code RS 5-17, part 5(a).

RESPONSE

Resolved on the 3/1/89 set.

COMMENT #29

Dwgs. #A-5 and E-5. Provide two means of access to each of the network compartments. NYC Electrical Code Section B30-43.0-m.3.

RESPONSE

A-5 corrected on 3/1/89 set. E-5 corrected on 4/3/89 set.

COMMENT #30

Specifications, p. 16002-2, part B-2. Delete THWN wire insulation, and substitute a non-PVC type.

RESPONSE

Resolved for risers on E-R1 4/3/89.

COMMENT #31

Dwgs. #A-35 and A-44 refer to battery rooms. Submit design for ensuring that there will be sufficient diffusion and ventilation of battery gases so as to prevent the accumulation of an explosive mixture. NYC Electrical Code Section B30-143.0.

RESPONSE

Resolved on Dwgs. HVAC 34,35,44 3/1/89.

COMMENT #32

Dwgs. #E-5, E-52: Expanded electric service. Submit complete information on equipment dimensions, clearances, transformer vault wall materials, conductor sizes, overcurrent device settings, containment of spilled transformer fluid and generator fuel, and the boundary separating the area under exclusive control of Con Edison from that under customer control. NYC Electrical Code sections 27-3048 (B30-44.1), 27-3045 (B30-43.0), 27-3047 (B30-44.0), 27-3272 (B30-246.0), 27-3274 (B30-248.0), 27-3275 (B30-249.0), and Bulletin No. 102-1967 (Revised), and NEC Sections 110-16 and 110.33.

RESPONSE

Resolved on E-R2 and Arch set 3/1/89.

COMMENT #33

Dwg. #E-R2. Justify tapping the 13.2KV feeders; clarify how overcurrent protection of the tap conductors is accomplished, and show the splice chamber on the plans. NYC Electrical Code sections 27-3093 (B30-82.0), 27-3292 (B30-266.0).

RESPONSE

Splice chamber eliminated. See E-U2 4/3/89.

COMMENT #34

Dwgs. #E-R1, E-R2. Submit short-circuit calculations and tabulation of short-circuit ratings for buses, fuses, switches, and circuit breakers, with corresponding values of short-circuit current. NYC Electrical Code sections 27-3047 (B30-44.0), 27-3048 (B30-44.1), 27-3067 (B30-59.0), NEC sections 110-9, 110.10.

RESPONSE

Calculations not available pending purchase of generators. Maximum available short circuit noted on dwg. E-R1 and E-R2.

COMMENT #35

ESA Voice and Data Cable Specifications, paragraph 2.a. Delete reference to areas having no fire suppression system, so that the referenced cables will be required whenever used outside of metallic raceway to traverse air circulation spaces. NYC Electrical Code Bulletin No. 126-Revised 1983, NEC Sections 770-6(c), 800-3(b)(3).

RESPONSE

Tenant related hold for future.

COMMENT #36

Flack & Kurtz Specifications, page 19, paragraph 7.c. Substitute non-PVC insulation for THW and THWN wiring.

RESPONSE

Outline specification superseded - also see comment #30.

COMMENT #37

Specifications section 14010, "General Conveying Systems Provisions." Add the NYC Electrical Code to the list of Reference Standards, part 1.02-B.

RESPONSE

Resolved in Elevator Specification 3/1/89.

COMMENT #38

Code Analysis, re: response to comment numbers 8 through 21 of Quality Assurance Division memo dated 12/5/89. Submit revisions conforming with the response.

RESPONSE

SOM to revise code analysis.

COMMENT #39

Code Analysis. re: response to comment number 22 of Quality Assurance Division memo dated 12/5/88. PVC wiring is prohibited indoors, even if run in conduit.

RESPONSE

Resolved for risers on E-R1 4/3/89.

COMMENT #40

Affix PE or RA seal and signature to all drawings. The "C" and "ELV" series of drawings have not been signed and sealed. NYC Building Code section 27-157 (C26-110.2).

RESPONSE

Resolved on 3/1/89 set.

ELECTRICAL - See TCRU 3/24/89

COMMENT #2

Specification Sections 15302 (Standpipe and Sprinkler Systems) and 15303 (Halon System), re: Wiring, Substitute Teflon for type THWN insulation. See NYC Building Code RS 17-3A, part 6.

RESPONSE

See specification revision.

COMMENT #3

Dwg. E#-R2. Justify the omission for individual overcurrent protection for the line side of each new transformer, as had been provided in the design used for the original installation, Alteration Application #W-01437, Dwg. #E-23.

RESPONSE

See note E-R2 4/3/89.

RESPONSE TO P.A. COMMENTS MARCH 22, 1989

HVAC

COMMENT #41

Dwg. HVAC-1. For the new 6500 gallon underground fuel oil tank and piping indicated on the drawing, provide design details as required to demonstrate conformance with all applicable provisions of Subchapter 14, Article 17 of the NYC Building Code as well as 6NYCRR part 614. Standards for New and Substantially Modified Petroleum Storage Facilities. In contract documents, please specifically address: secondary containment to collect and contain fuel leaks, leak monitoring system, anticorrosive protection of the tank and all associated underground piping, as well as pressure testing and inspection procedures. Please note that design details shown on Dwgs. #S-33 and HVAC-54 are contradictory and neither of them meet code requirements for the secondary containment of the potential fuel leak. See also comments #62 and 63 below.

RESPONSE

Dwg. #HVAC-1. Revised drawing indicates double wall construction Fiberglass Fuel oil tank to be provided with intestitial leak detection between tank walls. All buried piping to be provided with cathodic protection.

COMMENT #42

Dwgs. #HVAC-2, HVAC-3 and HVAC-4. Provide and show on plans a separate dedicated shaft for the fuel oil risers in conformance with NYC Building Code, Section C26-1416.3.(f)5.

RESPONSE

Dwg. #'s HVAC 2 - 4. Revised drawing indicates fuel oil risers to be encased in a 2-hr. rated pipe assembly or a dedicated shaft.

COMMENT #43

Dwg. #HVAC-5. In conformance with Code Section C26-14163(f).2., provide double wall construction for the horizontal fuel piping on the 5th floor. Indicate on the drawing the extent of such piping construction and cross-reference it to details and specifications.

RESPONSE

Dwg. #HVAC-5. Revised drawing indicates double wall construction for main horizontal fuel oil piping with reference to detail on drawing #HVAC-54.

COMMENT #44

Dwgs. #HVAC-5 and HVAC-6. Since outside air intakes shown on these drawings are in proximity of the existing Con Edison Substation venting louvers, please provide HVAC contract documents with clear description of the provision undertaken in this design to prevent the introduction of the potential substation fire into the building. See N.Y.C. Building Code RS 13-1, Sections 2-3.4.3. and 3-3.6.

RESPONSE

Dwg. #'s HVAC-5 and 6. Revised drawings indicate fire dampers in all plenum wall openings. Any smoke introduced into the SBI generator room will be exhausted by the radiator fans.

COMMENT #45

Where modified sheet duct risers cross over to other shaft locations on numerous floors in the building, they shall either be enclosed in 2-hr. rated construction (the same as required for shaft enclosures), or fire dampers and access doors shall be installed at the penetrations of all floor slabs and/or walls in conformance with Code Section C26-504.6(c) and RS 13-1, Section 3-3.

RESPONSE

Will comply.

COMMENT #46

Dwg. #HVAC-31. On the plan, part plan and section shown on this drawing clarify the functions of new duct risers as well as modified ducts and duct openings in the 31st floor MER. See Code Section C26-116.3.

RESPONSE

Dwg. #HVAC-31. Drawing clarifies function of new risers in plan and section by number.

COMMENT #47

Dwg. #HVAC-34. Please clarify how the new 60x12 toilet exhaust duct riser can be accommodated into the P29 elevator shaft.

RESPONSE

Dwg. #HVAC-34. Resolved as per 3/1/89 issue.

COMMENT #48

Dwg. #HVAC-35. Please clarify a designation of Section A-A, which appears to be reversed. See Code Section C26-110.2.

RESPONSE

Dwg. #HVAC-35. Resolved as per 3/1/89 issue.

COMMENT #49

Dwg. #HVAC-35. Please indicate provisions for mechanical exhaust from the electrical storage battery room on this floor. See NYC Electrical Code, Section B30-143.0. Make same provisions for the 44th floor battery room indicated on architectural drawings.

RESPONSE

Dwg. #HVAC-35. Resolved as per 3/1/89 issue.

COMMENT #50

Dwg. #HVAC-47. Provide part plans, sections and/or elevations as required to clarify the arrangements and functions of new ducts at new airshafts as well as both smoke exhaust fans. See Code Section C26-116.3.

RESPONSE

Dwg. #HVAC-47. Resolved as per 3/1/89 issue. Note #2 provides a reference to drawing #HVAC-52,2 to clarify smoke exhaust system.

COMMENT #51

Dwg. #HVAC-48. Show kitchen exhaust duct and fan arrangements for the 41st floor express food servery. See NYC Building Code RS 13-3.

RESPONSE

Dwg. #HVAC-48. This drawing will be reissued as an architectural background with notes to indicate kitchen exhaust system to be completed under tenant work.

COMMENT #52

Dwgs. #HVAC-48 and HVAC-49. Please remove discrepancies between these drawings that pertain to locations of kitchen exhaust fans and air conditioning unit AC-2. See Code Section C26-116.3.

RESPONSE

Dwg. #HVAC-48. To avoid confusion, this drawing will be reissued as an architectural background with notes referencing the appropriate drawings for these areas.

COMMENT #53

Dwgs. #HVAC-48 and HVAC-49. For new, air handling units, provide and show on plans the physical locations of duct mounted smoke detectors in conformance with RS 13-1, Section 4-3. In addition - for air handling units with capacities greater than 15,000 CFM, provide the protection against combustion of air filter systems in conformance with requirements of RS-13-1, Section 2-4.1.2.

RESPONSE

Dwg. #HVAC-49. Revised drawing indicates smoke detector and smoke damper for O.A. unit A/C-1.

COMMENT #54

Dwg. #HVAC-54, Duct Hanging Detail. Please complete Note #2 to list maximum allowable spacings for duct hangers in conformance with RS 13-1, Section 2-1.1.2.3.(g).(5).

RESPONSE

Dwg. #HVAC-54. Revised drawing indicates maximum hanger spacing.

COMMENT #55

In conformance with requirements of NYC Building Code, Section C26-110.2 provide installation details for all types of new fans (smoke exhaust, kitchen exhaust, etc.), air handling units, expansion tanks, and other new base building system components to show their methods of support and anchoring to the building structure.

RESPONSE

As per C26-116.3. These details are not required when structural drawings are submitted as part of the documents.

COMMENT #56

Provide installation details for all types of fire dampers intended to be used in this design. See Code Section C216-116.3.

RESPONSE

Dwg. #HVAC-54.1. Revised fire damper details indicates minimum 14 GA sleeve for hollow wall construction and complies with section RS13-10, 3-3.7.2.3 and C26-504.5(c).

COMMENT #57

Provide of installation detail of piping penetration through rated construction in conformance with all provisions of the Code Section C26-504.5.

RESPONSE

Dwg. #HVAC-54.1. Resolved as per 3/1/89 issue.

COMMENT #58

For all air handling systems, provide detailed sequence of operations, backed by air flow diagrams, if necessary, to demonstrate conformance with all provisions of the Code Section C26-1300.8, RS 13-1, Sections 2-4.1.2, 4-3 and 4-3.1. Also please describe all required interfacings between air handling systems and the existing Class E fir alarm and communication system in the building.

RESPONSE

Building Management system will be provided for sequence of operation for all air handling systems. Dwg. #HVAC-53 issued as part of the 3/1/89 submission provides descriptive air flow diagrams for each individual floor.

COMMENT #S 59-63 Have been answered with specification revisions in the April 6, 1989 issue and included in this issue.

RESPONSE TO P.A. COMMENTS MARCH 24, 1989

COMMENT #4

Dwgs. #HVAC-31 and #HVAC-33. Provide fire dampers with access doors into exhaust and/or transfer air ducts at penetration of shaft walls adjacent to elevator P28. See NYC Building code RS 13-1, Section 3-3.2.1.

RESPONSE

Dwgs. #HVAC-31 & 33. Revised drawings indicate fire dampers with access doors for toilet exhaust and transfer ducts.

COMMENTS #5

With regard to the modifications of the building smoke control system, please provide detailed description of the new system and its intended operation, clarify on plans, part plans and sections the functions of the new air shafts and coordinate their plans with air risers shown on drawing #HVAC-53.1. See Code Section C26-116.3.

RESPONSE

Dwg. #HVAC-31. Revised drawing clarifies function of new risers in plan and section. Air riser diagram HVAC-53.1 issued as part of the 3/1/89 submission provides descriptive airflow diagrams for each individual floor.

COMMENT #6

Dwgs. #HVAC-46 and #HVAC-47. Show kitchen exhaust duct and fan arrangements for the 41st floor express food servery. See NYC Building Code RS 13.2.

RESPONSE

Kitchen exhaust systems will be provided for as part of the tenant work.

COMMENT #7

Dwgs. #HVAC-46 and #HVAC-47. Where 26x8 and 16x8 toilet exhaust ducts penetrate shaft walls, provide fire dampers and access doors in conformance with RS- 13-1, Section 3-3.2.1. Also on Dwg. #HVAC-47, provide fire damper and access doors in toilet and elevator machine room exhaust ducts where they leave a duct shaft.

RESPONSE

Revised drawings HVAC-46 and HVAC-47 indicate fire dampers and access doors where required.

COMMENT #8 — re 54.1 - as typical

Dwgs. #HVAC-34.1, Fire Damper Detail. Specify gauge of fire damper sleeve to be No. 14 US standard gauge in conformance with Code Section C26-304.5(c). Also please provide installation details representative for all types of fire dampers intended to be used in this design.

RESPONSE

Revised drawing HVAC-54.1 indicates both types of fire dampers to be used and specific 14 GA construction for hollow wall sleeves.

COMMENT #9

Drawing HVAC-54.1, Kitchen Range Hood Equipment Detail. Show only such methods of kitchen exhaust duct enclosure that are accepted by RS 13-3 and indicates on plans the sections of the exhaust ducts where these methods are to be applied.

RESPONSE

This detail will be reissued as part of the tenant package and is omitted under base building modifications.

THE PORT AUTHORITY OF NEW YORK & NEW JERSEY

M E M O R A N D U M

To: Mr. R. Linn, Deputy Director for Physical Facilities, WT&ED
From: Ennala Ramabhushanam
Date: March 24, 1989
Subject: WTC - ALTERATION APPLICATION #W-7004 - SALOMON BROTHERS - 7 WTC - BASE BUILDING MODIFICATIONS

Reference: Tenant Alteration Review Requests, dated 3/14/89 and 3/21/89

Copy To: L. Sanchez A. Vaccaro Job Folder
Chrono Folder

A review of the material submitted with the referenced request for the subject application has been made.

It is recommended that approval to proceed be withheld pending submission of the items indicated below being revised in accordance with the nine (9) requirements listed on the attached rider.

REMARKS: The attached Rider contains only new comments resulting from the review of the submissions received on 3/14/89 and 3/21/89, and are additional to the comments listed below which have been enummerated in our memo dated 3/22/89:

a) 14 tenant-work related comments
b) 27 base-building comments, and
c) 3 PVC related comments

Ennala Ramabhushanam, P.E.
Manager
Quality Assurance Division

JPV/dm
att.

RIDER

ALTERATION APPLICATION #W-7004

ARCHITECTURAL

1. Dwg. #A-3, Third Floor Plan. Clarify function and Occupancy Group of space south of Lounge #03-000. Provide information on partition type for the space. N.Y.C. Building Code Sections C26-301.2.

ELECTRICAL

2. Specification Sections 15302 (Standpipe and Sprinkler Systems) and 15303 (Halon System), re: Wiring. Substitute Teflon for type THWN insulation. See N.Y.C. Building Code RS 17-3A, part 6.

3. Dwg. #E-R2. Justify the omission of individual overcurrent protection for the line side of each new transformer, as had been provided in the design used for the original installation, Alteration Application #W-01437, Dwg. #E-23.

MECHANICAL

4. Dwgs. #HVAC-31 and #HVAC-33. Provide fire dampers with access doors into toilet exhaust and/or transfer air ducts at penetration of shaft walls adjacent to elevator P28. See N.Y.C. Building Code RS 13-1, Section 3-3.2.1.

5. With regard to the modifications of the building smoke control system, please provide detailed description of the new system and its intended operation, clarify on plans, part plans and sections the functions of the new air shafts and coordinate their plans with air risers shown on drawing #HVAC-53.1. See Code Section C26-116.3.

6. Dwgs. #HVAC-46 and #HVAC-47. Show kitchen exhaust duct and fan arrangements for the 41st floor express food servery. See N.Y.C. Building Code RS 13-3.

7. Dwgs. #HVAC-46 and #HVAC-47. Where 26 x 8 and 16 x 8 toilet exhaust ducts penetrate shaft walls, provide fire dampers and access doors in conformance with RS 13-1, Section 3-3.2.1. Also, on Dwg. #HVAC-47, provide fire damper and access doors in toilet and elevator machine room exhaust ducts where they leave a duct shaft.

8. Dwgs. #HVAC-54.1, Fire Damper Detail. Specify gauge of fire damper sleeve to be No. 14 U.S. standard gauge thick in conformance with Code Section C26-504.5(c). Also, please provide installation details representative for all types of fire dampers intended to be used in this design.

9. Dwg. #HVAC-54.1, Kitchen Range Flood Equipment Detail. Show only such methods of kitchen exhaust duct enclosure that are accepted by RS 13-3 and indicate on plans the sections of the exhaust ducts where these methods are to be applied.

032489

PA 2127
1-85

TENANT ALTERATION REVIEW REQUEST

	CHECK APPLICABLE ROUTING	ROOM NO.
✓	Engineering (T.C.R.U.)	43NE
	Risk Management – JSTC – Zip 43	6 FL
	Operations Standards – JSTC – Zip 75	5 FL
	Terminal Properties Div.	56S
	Control Desk	
	Facility Manager –	
	Port Dept. – Planning Div.	64S
	Aviation Technical Services Div.	65S
	Air Terminal Properties Div.	
	JFK – Business Administration – Zip 6	
	NIA – Business Administration – Zip 19	
	Marine Development & Rentals Div.	71E
	Inspection & Safety	
	Resident Engineer	

Description of Work:

REVIEW OF STRUCTURAL CALCULATIONS

(ADD'L TO PKG 11)

FACILITY 7 WTC

APPLICANT'S NAME SALOMON BRO.

APPLICATION NO. W 7004

DRAWING NO(S). SEE BELOW

DATE 3 ,21 ,89

☑ You are requested to review the attached application and forward your comments to:

☐ Attached are revised drawings. Please review only those items on which exception was previously taken and send your comments to:

Org. Unit	Room No.	Contact	Ext.
812	4 S	L. SANCHEZ	8566

No later than ASAP

PROJ. ADMIN.
Title

If no reply is received by above date, your concurrence will be assumed unless arrangements have been made for additional time for review.

FOR USE OF REVIEWING DEPARTMENT

COMMENTS: (Use reverse side if necessary) Indicate next to each comment whether it is a condition or recommendation.

"PORT AUTHORITY COMMENT RESPONSE"
(MARCH 21, 1989)

Responses to Comments #23 & 24

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
MAR 21 1989
W-7004
ALTERATION APPLICATION

L. SANCHEZ

se check applicable box)

☐ Approved ☐ Approved with Conditions and Recommendations Noted Above ☐ Disapproved with Requirements for Approval Noted Above ☐ Disapproved for Reasons Noted Above

Signature	Title	Date
		/ /

THE OFFICE OF IRWIN G. CANTOR, P.C. / CONSULTING ENGINEERS
219 EAST 42ND STREET • NEW YORK, NEW YORK 10017 • TELEPHONE (212) 949-9150
IRWIN G. CANTOR, P.E., F.A.C.I. chief executive officer
YSRAEL A. SEINUK, P.E., F.A.C.I. president

TELECOPY TRANSMITTAL

7WTC
88057

The foregoing document is being transmitted via Xerox Telecopier 7010:

FAX # BEING SENT TO: 313 - 2032

DATE: 3-21-89

TO: Mr L. Sanchez

FROM: Mr. A. Tamboli

SPECIAL INSTRUCTIONS: Please confirm receipt.

ADDITIONAL PAGE FOR COMMENT NO. 26
AS DISCUSSED WITH Mr TONY HOOD
AT THIS MORNING'S MEETING
THIS WILL COMPLETE THE RESPONSE
FOR STRUCTURAL COMMENTS 23 THRU 27

NUMBER OF PAGES (including cover sheet): 3

PHONE NUMBERS TO CONTACT:

(212) 949-9150 Ext. 201 MAIN NUMBER
(212) 697-5867 FAX NUMBER

Mr. Evan Schneider
CC. Mr. Don Sullivan.

SILVIAN MARCUS, P.E. executive vice president • ETAO SALCEDO, P.E. senior vice president
vice presidents
... • JOSEPH PETRINO • ANTHONY RIZZI, P.E. • JEFFREY SMILOW, P.E. • AKBAR TAMBOLI, P.E.

RIDER RESPONSE ALTERATION
APPLICATION NO. W-7004-SALOMON BROTHERS
7 WTC - BASE BUILDING MODIFICATION
IGC JOB. NO. 88057

STRUCTURAL

Comment 23: Submit computations for the additional framing around proposed floor openings, for all floors.

Response: Enclosed are computations for proposed floor openings for all floors. Some of the openings have been submitted with previous submissions; reference has been made to previously submitted computations where applicable.

Comments 24: Submit computations for the auditorium framing shown on drawing S-14.

Response: The computations for auditorium framing have been submitted to the Port Authority submission dated 11/28/88 on pages 38-1 thru 38-8 (for 38th floor) and 39-1 thru 39-11 (for 39th floor).

Comments 25,26,27:

These comments have been answered in submission made to Port Authority on March 1st, 1989.

AT:mm

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
MAR 21 1989
(9)
W-7004
ALTERATION APPLICATION

THE OFFICE OF
IRWIN G. CANTOR, P.C.
Consulting Engineers
"Member Cantor/Seinuk Group"
219 EAST 42ND STREET
NEW YORK, N.Y. 10017
PHONE (212) 949-9150

JOB / WI , N-/
SHEET NO. ____ OF ____
CALCULATED BY KFC DATE 3-21-89
CHECKED BY ____ DATE ____
SCALE ____

NEW PENTHOUSE ROOF DESIGN
IS BASED ON THE FOLLOWING LOADINGS:

DEAD LOAD :	SLAB	= 50 PSF
	STEEL BEAM	= 7
	FILL & ROOFING	= 26
	CEILING	= 8
	SUPERIMPOSED ANTENNA LOAD ALLOWANCE	= 10
		101 PSF
LIVE LOAD (SNOW)		30 PSF
	TOTAL LOAD	= 131 PSF

ANTENNA LOADS 11^K (EACH ANTENNA)

$$w = \frac{2 \times 11^K}{60^{FT} \times 60^{FT}} = 6 \ \#/SQ\ FT. < 10 \text{ PSF ALLOWANCE}$$

NOTES: (1) DUNNAGE REQUIREMENT OF 60' x 60' HAS BEEN SPELLED OUT ON STRUCTURE DRAWING AND WILL ALSO BE NOTED ON COMMUNICATION DRAWING C-48-1 WITH A NOTE THAT FINAL CONFIGURATION AND LOADS SHALL BE SUBMITTED TO BASE BUILDING ENGINEER OF RECORD.

(2) DUNNAGE WILL BE SUPPORTED WITH BASE PLATES ON THE TOP OF THE EXISTING BEAMS AND GIRDERS WHERE LOADING EXCEEDS ASSUMED LOADING, BEAMS WILL BE REINFORCED AS REQUIRED.

M E M O R A N D U M

To: R.J. Linn, Deputy Director for Physical Facilities, WT&ED
From: Ennala Ramabhushanam
Date: March 22, 1989
Subject: 7 WTC - SALOMON BROTHERS - TAA 7004

Reference: Memorandum E. Ramabhushanam to R.J. Linn, dated 3/13/89

Copy To: Cooper, Dovletian, LaRocco, Monti, Sanchez

On 3/21/89 simultaneous working meetings were held between TCRU staff and Salomon Brothers Consultants on a one-to-one basis for each discipline, for the purpose of expediting the review process towards a recommendation of approval for the tenant to proceed with the base building modification stage of the project, which is the first of two stages, the second stage being their tenant work.

The sixty-three (63) technical comments issued by TCRU on 3/13/89 in the referenced memorandum, which included all the comments resulting from reviews of several tenant submissions reviewed up to that date, were discussed, and resulted in the following:

1. Fourteen (14) tenant-work related comments will be deleted from the 3/13/89 memorandum and carried forward to the tenant-stage submissions. These items, as listed below, will be incorporated by the Tenant's Architect into his future tenant-work submissions. Included in this category are:

   - 11 Architectural comments (#1,2,3,4,5,7,11,14,15,16 and 17)
   - 1 Electrical comment (#35)
   - 2 Mechanical comments (#51, and part of 61)

2. Twenty-two (22) base-building-modification comments were resolved and eliminated. These require no further action. Included in this category are:

   - 7 Architectural comments (#6a, 8,9,10b and c, 12,13 and 18)
   - 2 Structural comments (#25 and 27)
   - 7 Electrical comments (#28,29,31,32,33,37, and 40)
   - 6 Mechanical comments (#45,46,47,48,49 and 57)

3. Twenty-seven (27) base-building-modification comments will require changes to the drawings, specifications, and various technical analyses. The Tenant's Architect has agreed to revise his contract documents accordingly and resubmit them for final approval. Included in this category are:

   - o 6 Architectural comments (#6b and c, 10a,19,20,21 and 22)
   - o 3 Structural comments (#23,24, and 26)
   - o 2 Electrical comments (#34, and 38)
   - o 16 Mechanical comments (#41,42,43,44,50,52,53,54,55,56, 58,59,60, part of 61,62, and 63)

4. Three (3) electrical comments, #30, 36 and 39, pertain to the limitation of the use of PVC insulated cables, and are yet to be resolved.

Please note that comments #6, 10, and 61, were each resolved in two parts, and that each part was placed in its appropriate category. This resulted in an actual total of sixty-six (66) comments resolved or outstanding.

Ennala Ramabhushanam

Ennala Ramabhushanam, P.E.
Manager
Quality Assurance Division

PSC/VAD/dm

3/15

PA 2127
1-85

TENANT ALTERATION REVIEW REQUEST

CHECK APPLICABLE ROUTING	ROOM NO.
Engineering (T.C.R.U.) 51 NE	[illegible]
Risk Management – JSTC – Zip 43	6 FL
Operations Standards – JSTC – Zip 75	5 FL
Terminal Properties Div.	56S
Control Desk	
Facility Manager –	
Port Dept. – Planning Div.	64S
Aviation Technical Services Div.	65S
Air Terminal Properties Div.	
JFK – Business Administration – Zip 6	
NIA – Business Administration – Zip 19	
Marine Development & Rentals Div.	71E
Inspection & Safety	
Resident Engineer	
✓ WTC CONSTRUCTION	3861
✓ L. SANCHEZ	
✓ E. McNIERNEY	

Description of Work:

REVIEW OF CONTRACT DRAWINGS (WTC PLANNING ISSUE No 11)

FACILITY: 7 WTC

APPLICANT'S NAME: SALOMON BROS

APPLICATION NO.: W 7004

DRAWING NO(S).: PER ATTACHED

DATE: 3, 14, 89

☑ You are requested to review the attached application and forward your comments to:

☐ Attached are revised drawings. Please review only those items on which exception was previously taken and send your comments to:

Org. Unit	Room No.	Contact	Ext.
821	74 S	L. SANCHEZ	466 8566

No later than APRIL 25, 1989 Title

If no reply is received by above date, your concurrence will be assumed unless arrangements have been made for additional time for review.

FOR USE OF REVIEWING DEPARTMENT

COMMENTS: (Use reverse side if necessary) Indicate next to each comment whether it is a condition or recommendation.

- 3 SETS OF CONTRACT DRAWINGS
- 3 " " SPECIFICATIONS
- 3 " " STRUCTURAL CALCULATIONS - Book 1
- ~~3~~ " " ~~[illegible]~~

DRAWINGS ARE DATED MARCH 1, 1989

- 2ND FLR. - EGRESS DIAGRAM SK-1005, SK-1006, SK-1007 - dated 3/1/89
- STRUCTURAL RESPONSE – STRUCTURAL COMPUTATIONS
- RESPONSES TO COMMENTS ARCH. - ELECT. - HVAC (FROM PACKAGE #8)

L. SANCHEZ

office copy

THE PORT AUTHORITY OF N.Y. & N.J. ... REVIEW UNIT RECEIVED MAR 5 1989 W-7004 (8) ALTERATION APPLICATION

(Please check applicable box)

☐ Approved ☐ Approved with Conditions and Recommendations Noted Above ☐ Disapproved with Requirements for Approval Noted Above ☐ Disapproved for Reasons Noted Above

Signature	Title	Date
		/ /

SKIDMORE, OWINGS & MERRILL
220 EAST 42ND STREET, NEW YORK, NEW YORK 10017

TRANSMITTAL

TO: The Port Authority of NY & NJ
One World Trade Center
New York, NY 10048
Attn: Lou Sanchez

RE: Salomon Brothers Inc
7 World Trade Center
New York, NY 10048

WE ARE SENDING HEREWITH THE FOLLOWING:

____ DRAWINGS ____ SPECIFICATIONS ____ SHOP DRAWINGS ____ OTHER

As requested, we are encloseing "Point By Point" responses to the Port Authority comments and SBI drawings issued 12/19/88.

By: Donald Sullivan DATE: March 1, 1989

[] RECEIPT AND RETURN TO SOM REQUESTED X Donald Sullivan

Copies: M. Fernandez
E. Schneider
J. Beech
A. Tamboli
W. Mathison
CF 6234-000.135

PORT AUTHORITY OF N.Y. & N.J.
CONSTRUCTION REVIEW UNIT
RECEIVED
MAR 15 1989
W-7004 (8)
ALTERATION APPLICATION

SALOMON BROTHERS INC
7 WORLD TRADE CENTER

RIDER RESPONSE: Alteration Application #W-7004
March 1, 1989

Architectural

1. COMMENT: Dwg. #A-2, Second Floor Plan, Auditorium. The basic plan shown shall be supplemented by a complete plan showing the seating, aisles, steps, stage, etc. Also, show dimensions, clarify the access to the Elevator Machine Room, and the function and/or occupancy classification of spaces where not yet shown. (N.Y.C. Building code Section C26-110.2).

   RESPONSE: Second floor auditorium seating and finishes will be part of the tenant dwgs. which are scheduled to be issued August 1989. Dimensions and room classifications are on dwgs. Door to MER will be incorporated on 3/1/89 issue.

2. COMMENT: Dwg. #A-2, Second Floor Plan. In order for the area north of the auditorium to be classified as a safe area, its clear width throughout shall be not less than eight (8) feet. Increase the width of the safe area legs at the auditorium doors to comply. (Code Section C26-801.11) (3).

   RESPONSE: Dwg. A-2, Second Floor Plan. Minimum dimension of 8'-0" will be incorporated on 3/1/89 issue in order that area north of auditorium to be classified as a safe area.

3. COMMENT: Provide an updated egress analysis for the Second, Third and Fourth Floor reflecting the latest revisions at these floors, establishing occupant loads, exit capacities and travel distances. Revise the indicated capacity of the direct exit from the auditorium to the street to be not more than the capacity of the street level door minus the occupant load of the building stair also discharging through this door. See Code Articles 6 and 8.

   RESPONSE: Latest egress analysis is attached.

4a. COMMENT: Identify the function and occupancy classification of spaces where missing. Also identify the intended use of the long closet along the side of the "Lounge."

   RESPONSE: All room functions are on drawings except the one room north of service elevator lobby. That room will have a title of "storage" on 3/1/89 issue. On 1/20/89 issue long closet was deleted.

4b. COMMENT: Clarify if the "Lounge" is still to be considered as part of the safe area at the Second Floor, in which case its serving a classroom, a staff room and a large locker room require to be justified.

RESPONSE: "Lounge" is considered part of safe area. Section C26-801-11 of code only restricts classifications of A,B-1,D-1 and D-2 which none of these rooms are.

4c. COMMENT: Clarify if the two (2) escalators at the north side are to be used also as exits from the floor above in which case their compliance with the requirements of Code Section C26-604.11 shall be substantiated.

RESPONSE: Escalators are exits from 4th floor with 2-hour rated enclosures. Tie-in to class "E" system will be part of tenant package.

5. COMMENT: Dwg. #A-3, Floor Plan. Identify the functions and occupancy classifications to be contained in the building area east of the main lobby, and the type and fire rating of its separation from the lobby. Note that this separation shall comply with the requirements of C26-720.0 (Atriums).

RESPONSE: The area east of the lobby is base building and we have no control over. The areas that SBI occupy are noted on dwg. and separated from main lobby with 2-hour wall (C-2 partition type).

6. COMMENT: Dwg. #A-4, Fourth Floor Plan. Show the relative extent of the dining, serving and kitchen areas, and identify partitions, guardrails and other enclosures. At dining areas show the room layout. (Code Section C26-110.2)

RESPONSE: The layout of this floor will be issued as tenant drawing.

7. Dwg. A-48, Main Roof Plan.

a. COMMENT: Clarify if new spaces have been added adjacent to the existing bulkhead and identify their functions.

RESPONSE: The bulkhead roof plan identifies the functions of the areas adjacent to existing bulkhead. The 3/1/89 issue will also show these indications on Main Roof Plan.

b. COMMENT: Verify and substantiate that the egress from the areas or spaces at this level comply with the requirements of Code Table 6-1.

RESPONSE: The code defines a roof structure housing service equipment and not having human occupancy as a bulkhead. Because there is no occupancy, the bulkhead is not required to conform with Table 6-1.

8. COMMENT: Dwg. #A-262, Bulkhead Elevations. Substantiate that the guardrail is designed to comply with the structural requirements of Code Section 27-558. (C26-902.3) (b).

RESPONSE: Guardrail structural requirements are on page 05500-6 of Miscellaneous Metals section of specifications issued 12/19/88.

duction of air pressure within the system or by the manual activation of a remote control located at each hose station.

AUTOMATIC DRY PIPE SPRINKLER SYSTEM.—A *sprinkler system* in which the piping up to the sprinkler heads is filled with air, either compressed or at atmospheric pressure, with the water supply controlled by a Type A or Type B *dry pipe valve*.

AUTOMATIC FIRE PUMP.—A pump that maintains a *required* water pressure in a fire extinguishing system and which is actuated by a starting device adjusted to cause the pump to operate when the pressure in the system drops below a predetermined pressure, and to stop the pump when the pressure is restored.

AUTOMATIC OPERATION.—As applied to an *elevator*, *shall* mean operation whereby the starting of the car is effected in response to the momentary actuation of operating devices at the landing, and/or of operating devices in the car identified with the landings, and/or in response to an automatic starting mechanism, and whereby the car is stopped automatically at the landings.

AUTOMATIC WET PIPE SPRINKLER SYSTEM.—A *sprinkler system* in which all piping and sprinkler heads are at all times filled with water under pressure which is immediately discharged when a sprinkler head operates, with the water continuing to flow until the system is shut off.

AUTOMOTIVE LIFT.—A vehicle-lifting device, the purpose of which is to raise an entire vehicle to provide accessibility for under-chassis service.

AUTOMOTIVE REPAIR SHOP.—A *building* or space in which *motor vehicles* are repaired.

AUTOMOTIVE SERVICE STATION.—A *building*, space, or *premises used* for the storage and sale of motor fuels, and which may also have facilities for lubrication, minor repairs, or washing of *motor vehicles*.

BACKFLOW (water supply).—The flow of water or other substances into the distribution pipes of a *potable water* supply from any source other than the intended source.

BALLOON FRAME.—Light timber *construction* in which the exterior *walls* consist of studs that are either continuous through floors or interrupted only by thickness of plates.

BASEMENT.—A *story* partly underground, but having less than one-half its clear height (measured from finished floor to finished ceiling) below the *curb level*, except that where the *curb level* has not been legally established, or where every part of the *building* is set back more than twenty-five feet from a *street line*, the height *shall* be measured from the *adjoining grade elevation*. (See CELLAR.)

BEARING.—As applied to a wall or *partition*, *shall* mean supporting any vertical load in addition to its own weight.

BELT-DRIVE MACHINE.—As applied to an *elevator*, *shall* mean an indirect-drive machine having a single belt or multiple belts as the connecting means.

BOARD.—The board of standards and appeals of the city of New York.

BOARDER (ROOMER, LODGER).—An individual living within a household who pays a consideration for such residence and does not *occupy* such space as an incident of employment therein.

BREEZEWAY.—A *structure* open to the outdoors consisting of a *roof*, roof supports, and floor, connecting a garage or other *accessory building* with a *dwelling*.

BUILDING.—An enclosed *structure* including *service equipment* therein. The term *shall* be construed as if followed by the phrase "*structure, premises*, or ... thereof" unless otherwise indicated by the text.

BUILDING HOUSE DRAIN.—That part of the lowest piping of a *drainage system* that receives the discharge from the soil, waste, and other drainage pipes and conveys it to the *building house sewer* by gravity. The building house drain *shall* be considered to extend five feet outside the exterior wall of the *building*.

BUILDING HOUSE DRAIN (COMBINED).—A *building house drain* that conveys storm water in combination with *sewage* or other drainage.

BUILDING HOUSE DRAIN (SANITARY).—A *building house drain* that carries *sewage* only.

BUILDING HOUSE DRAIN (STORM).—That part of the lowest piping of a storm *drainage system* that receives clear water drainage from *leaders*, surface runoff, ground water, subsurface water, condensate, cooling water, or other similar storm or clear drainage and conveys it to the *building house storm sewer* by gravity. The building house storm drain *shall* be considered to extend five feet outside the exterior wall of the *building*.

BUILDING HOUSE SEWER.—That part of the horizontal piping of a drainage system that extends from the end of the *building house drain* and that receives the discharge of the *building house drain* and conveys it to a *public sewer*, *private sewer*, individual *sewage-disposal system*, or other point of disposal.

BUILDING HOUSE SEWER (COMBINED).—A *building house sewer* that conveys *sewage* in combination with storm water and other clear water wastes.

BUILDING HOUSE SEWER (SANITARY).—A *building house sewer* that carries *sewage* only.

BUILDING HOUSE STORM SEWER.—That part of the horizontal piping of a storm *drainage system* that extends from the *building house storm drain* to the public storm sewer, combined sewer, or other point of disposal.

BUILDING SECTION.—A room, floor, group of floors, wing, or any other portion of a *building* contained within *fire divisions*.

BUILDING SUB-HOUSE DRAIN.—That portion of a house *drainage system* that cannot drain by gravity into the *building house sewer*.

BULKHEAD.—An enclosed *structure* on or above the *roof* of any part of a *building*, enclosing a *shaft*, stairway, tank, or *service equipment*, or other space not designed or *used* for human occupancy. (See PENTHOUSE and ROOF STRUCTURE.)

CABARET.—The term cabaret shall mean any room, place or space in which any musical entertainment, singing, dancing or other similar amusement is permitted in connection with an eating and drinking establishment.

CABLEWAY.—A power operated system for moving loads in a generally horizontal direction in which the loads are conveyed on an overhead cable, track or carriage.

CAR DOOR OR GATE.—As applied to an *elevator*, *shall* mean the sliding portion of the car that closes the opening giving access to the car.

CAR DOOR OR GATE SWITCH.—As applied to an *elevator*, *shall* mean an electrical device, the function of which is to prevent operation of the driving machine by the normal operating device unless the car door or gate is in the closed position.

ELECTRICAL

Comment

12. Dwgs. #E-5, E-R2: Expanded electrical service. Submit complete information on equipment dimensions, clearances, transformer vault wall materials, conductor sizes, overcurrent device settings, containment of spilled transformer fluid and generator fuel, and the boundary separating the area under exclusive control of Con Edison from that under customer control. N.Y.C. Electrical Code sections 27-3048 (B30-44.1), 27-3045 (B30-43.0), 27-3047 (B30-44.0), 27-3272 (B30-246.0), 27-3274 (B30-248.0), 27-3275 (B30-249.0), and Bulletin No. 102-1967 (Revised), and NEC Sections 110-16 and 110-33.

Response

12. Refer to Architectural drawings for sizes and details of vault construction, containment, materials and revised access to network protection compartments. Transformer vaults are under customer control as is existing high voltage switchgear. Equipment is drawing to scale; final equipment sizes can only be confirmed from shop drawings. Clearances meet requirements of NEC and New York City codes.

Comment

13. Dwg. #E-R2. Justify tapping the 13.2KV feeders; clarify how overcurrent protection of the tap conductors is accomplished and show the splice chamber on the plans. N.Y.C. Electrical Code sections 27-3093 (B30.82.0), 27-3292 (B30-266.0).

Response

13. Revised E-R2 shows how the existing H.V. switchgear will be tapped; a splice chamber is no longer required. Tap conductors are full size, same as existing feeders and protected by the main switch.

Comment

14. Dwgs. #E-R1, E-R2. Submit short-circuit calculations and tabulation of short-circuit ratings for buses, fuses, switches, and circuit breakers, with corresponding values of short-circuit current. N.Y.C. Electrical Code sections 27-3047 (B30-44.0), 27-3048 (B30-44.1), 27-3067 (B30-59.0); NEC sections 110-9, 110-10. (Modified repeat comment).

Response

14. Final available short-circuit current values will depend on generators purchased and will be confirmed on shop drawings. Maximum SCA at switchgear and 29th floor is noted on March 3, 1989 issue.

Comment

15. ESA Voice and Data Cable Specifications, paragraph 2.a. Delete reference to areas having no fire suppression system, so that the referenced cables will be required whenever used outside of metallic raceway to traverse air circulation spaces. N.Y.C. Electrical Code Bulletin no. 126-Revised 1983, NEC Sections 770-6(c), 800-3(b)(3).

Response

15. ESA to comment.

Comment

16. Flack + Kurtz Specifications, page 19, paragraph 7.c. Substitute non-PVC insulation for TWH and THWN wiring.

Response

16. Flack + Kurtz will revise specification to require XHHW insulation in lieu of THWN.

Comment

17. Specifications section 14010, "General Conveying Systems Provisions." Add the N.Y.C. Electrical Code to the list of Reference Standards, part 1.02-B.

Response

17. Will comply.

Comment

18. Code Analysis, re: response to comment numbers 8 through 21 of Quality Assurance Division memo dated 12/5/88. Submit revisions conforming with the response.

Response

18. SOM to add NEC and New York Electrical Code to Code Analysis.

Comment

19. Code Analysis, re: response to comment number 22 of Quality Assurance Division memo dated 12/5/88. PVC wiring is prohibited indoors, even if run in conduit. (Modified repeat comment).

Response

19. Specification to be revised to substitute XHHW in lieu of THWN.

Comment

20. Affix PE or RA seal and signature to all drawings. The "C" and "ELV" series of drawings have not been signed and sealed. N.Y.C. Building Code section 27-157 (C26-110.2). (Modified repeat comment).

Response

20. Will comply.

RESPONSE TO PA COMMENTS PACKAGE NO. 8

HVAC

Comment

21. Submitted HVAC drawings provide only an outline of the design work for the base building HVAC system modifications and do not contain sufficient design information (dimensions, design details, materials, construction methods, etc.) based on which such work can be reviewed for conformance with the N.Y.C. Building Code. Same applies to submitted outline specifications which are not included in contract documents for mechanical work in this building. See Code Section C26-110.2). (Modified repeat comment). Detailed review will be performed when above information is received.

Response

21. The drawings and specifications issued on January 20, 1989 and March 1, 1989 contain all information pertinent to the Base Building HVAC system modifications.

Comment

22. Design Guidelines VIII, Minimum Standards for Construction in New York City, Engineering Requirements - HVAC:

    a. Add the requirements for Smoke Control in conformance with Code Section C26-1300.8.

    b. For "General Requirements and Construction Requirements of Fuel Oil Storage Tanks" add requirements of the New York State Department of Environmental Conservation - GNYCRR: Part 612, Part 613 and Part 614.

    c. Revise NFFA 90-A, 1967 to NFFA 90-A, 1981.

    d. Revise NFFA 96, 1964 to NFFA 96, 1984.

    e. Revise ANSI-B9.1, 1971 to ANSI-B9.1, 1978.

Consultant's responses could not be verified as submitted for review materials, therefore, the comment is herein repeated.

Response

22. a. The existing smoke control system is modified in accordance with New York City Code Section C-26-1300.8 and the Base Building design intent. The sequence of operation of smoke fans and dampers will be issued in the near future in conjunction with the Class E system.

b. SBI's oil system will be independent of the Base Building and will be constructed as per the Base Building fuel oil system.

c. All code references will be the current issue.

d & e

Comment

23. Dwg. #HVAC-1. For the new 6500 gallon fuel oil tank and piping indicated on the drawing provide part plans, sections and/or elevations as well as specifications and design details as required to demonstrate conformance with all applicable provisions of Subchapter 14, Article 17 of the N.Y.C. Building Code and standards for new and substantially modified petroleum storage facilities, 6NYCRR, Part 614.

Response

23. The new fuel oil system will be built in accordance with the N.Y.C. Building Code and the Base Building Standard.

Comment

24. Dwgs. #HVAC-5 and HVAC-6. Since outside air intake shown on these drawings are in proximity of the existing Con Edison Substation venting louvers, please provide HVAC contract documents with clear description of the provision undertaken in this design to prevent the introduction of the potential substation fire into the building. See N.Y.C. Building Code RS 13-1, Sections 2-3.4.3. and 3-3.6.

Response

24. The existing fifth and sixth floor Base Building louvers on the west side of the building are not protected with fire dampers or smoke dampers. As with the Base Building generator room, any smoke introduced into the SBI generator room will be exhausted by the radiator fans.

Comment

25. Where modified sheet metal duct risers cross over to other shaft locations on numerous floors in the building, they shall either be enclosed in 2-hour rated construction, (the same as required for shaft enclosure) or fire dampers and access doors shall be installed at the penetrations of all floor slabs and/or shaft walls in conformance with Code Section C26-504.6(c) and RS-13-1, Section 3-3. (Repeat comment).

Response

25. Will comply.

Comment

26. Dwg. #HVAC-47. Provide part plans, sections and/or elevations as required to clarify the location, connection points and coordination with O.A. ducts for the new 64 X 48 smoke exhaust system duct section. See Code Section C26-110.2. Also provide in this duct the code required opening protectives at penetrations of all rated partitions in conformance with RS-13-1, Section 3-3. (Repeat comment).

26. Will comply. All information is shown on the March 1, 1989 submission.

Comment

27. Dwg. #HVAC-48. For new air handling units, provide and show on the plans the physical locations of duct mounted smoke detectors in conformance with RS 13-1, Section 4-3. The same requirement is applicable to the air handling units with capacities greater than 15,000 cfm.. Show the protection against combustion of air filter systems in conformance with requirements RS 13-1, Section 2-4.1.2.

Response

27. Will comply.

SALOMON BROTHERS INC.

BASE BUILDING MODIFICATIONS

7 WORLD TRADE CENTER

STRUCTURAL COMPUTATIONS

PORT AUTHORITY COMMENT RESPONSE

(3-1-89)

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
MAR 15 1990
W-2004 (8)
ALTERATION APPLICATION

office copy

CALCULATED BY

CHECKED BY

SCALE

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(1)

RIDER RESPONSE ALTERATION
APPLICATION No. W-7004 - SALOMON
BROTHERS - 7 WTC - BASE BUILDING MODIFICATIONS

Structural

Comment: 9, The report on ceiling anchor tests describes only one test on a ladd clip. This is not enough to recommend approval. Please revise the ceiling support details (repeat comment).

Response: Enclosed is a copy of New York City Board of Standard and Appeals approval for the anchor used for ceiling support of this project.

Comment: 10. The design of the roof framing shall include the loads from the antennae shown on drawing No. C-48-1.

Response: Actual loading from antennaes is shown on drawing submitted to the Port Authority on March 1st, 1989 and computation for effect on structure are enclosed herewith.

Comment: 11. Verify that concrete encased cables shown on drawing E.5 can be supported by the floor above.

Response: Enclosed are computations showing the load impact of concrete encased conduits supported on beams above.

AT:mm
2/28/89
Sal2.doc

PA COMMENT NO. 2

The City of New York

BOARD OF STANDARDS AND APPEALS

280 LAFAYETTE STREET, NEW YORK, N.Y. 10012

Telephone 566-5174
5104

JOSEPH B. KLEIN, Chairman

August 10, 1973

Mr. Donald E. Kearns, President
Ladd Tool Company, Incorporated
P. O. Box 467
West Chester, Pennsylvania 19380

Re: C.A. No. 48-6-BA

Dear Mr. Kearns:

This is to confirm that the above Calendar Number refers to the approval of the Ladd TT powder actuated tool, including the pin, load and clip combination and any other accessories necessary for its operation.

Very truly yours,

Stuart Lowenthal

Stuart Lowenthal
Assistant Engineer

L/ab

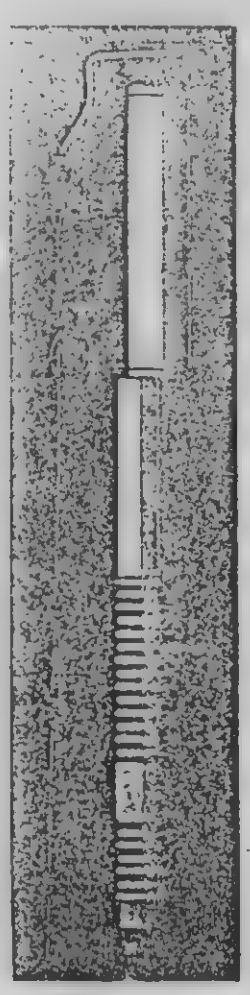
Mr. Seaman

STANLEY SUPPLY & TOOL INC.
Fastening Is Our Business
145 Michael Dr. Syosset, NY 11791
(516) 364-3443

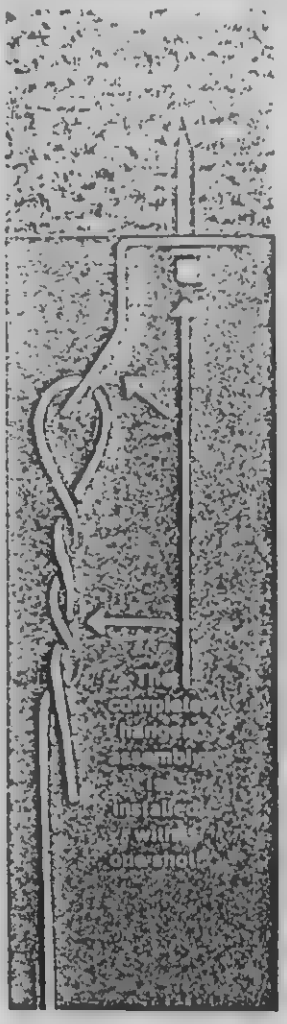
PA COMMENT #9

(3)

Tomlinson Engineering Company* Charlotte, North Carolina



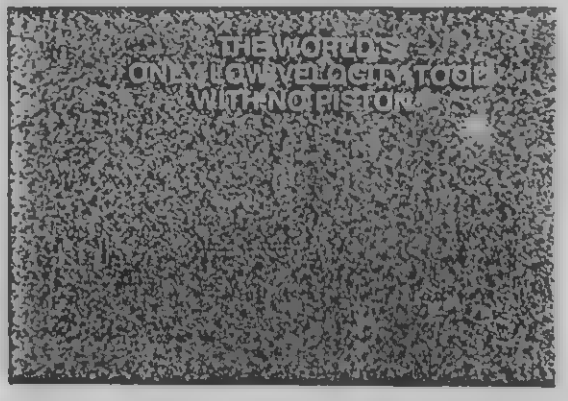
No piston.
No trigger!



Over 60% greater holding force than the other leading pdt tool!!

(Test results available upon request

Even when used with ordinary alignment methods, the Ladd Ceiling Master is the fastest tool around. But when you combine Ceiling Master with laser alignment systems, you get an incredibly fast, accurate and easy-to-use system—Write today for the complete story.



The Ladd Ceiling Master is the most important breakthrough ever in tools for the ceiling contractor. It's the fastest, easiest and most reliable way to install hanger wires all in one step!

As one contractor* writes: ". . . we have installed about 30% of the hangers on the large 40-story North Carolina National Bank Plaza building with excellent results . . . Approximately 1,500 hangers per floor in areas cluttered with sheetrock, sections of metal duct and many other items that would hamper the use of scaffolds."

"It was necessary to install the hangers exactly 4 foot on center in each direction, and plumb. By using 2 laser tools and 3 of your Ceiling Masters, we were able to reduce our labor cost approximately 60%."

GREATER HOLDING POWER THAN ANY PISTON TOOL!

For complete details on the Ladd Ceiling Master, write to:

Ladd TOOL COMPANY, INC.

Lincoln Industrial Park • Box 467 • West Chester, Pennsylvania 19380 • (215) 436-4838

Specialists in Ceiling Hanger Tool Systems:

Ceiling Master*	for concrete and steel decks
J-Master*	for open-web bar joists
Clip-Pur*	for Z-purlins
ScrewMaster	for wood beams and joists

PA COMMENT NO. 9

48-69-SA

APPLICANT—Ladd Tool Company, Incorporated, owner.

APPEARANCES—

For Applicant: None.

ACTION OF BOARD—Resolution amended in accordance with the report and recommendation of Committee on Test.

ACTION OF BOARD—Application reopened and resolution amended in accordance with the report and recommendation of the Committee on Test.

THE VOTE—

Affirmative: Vice Chairman Becker, Commissioner Klein, Commissioner Madigan, and Commissioner Nolan 4
Negative: 0
Absent: Chairman Galvin 1

THE RESOLUTION—

WHEREAS, the report of a Committee on Test reads:

48-69-SA—Amendment to resolution as to change of owner-manufacturer.

Ladd Tool Company, Incorporated, West Chester, Pennsylvania requested that the resolution adopted April 29, 1970 under Calendar 48-69-SA be reopened and amended so as to show a change of owner-manufacturer.

PROPOSED USE: Powder actuated tool.

DESCRIPTION: There has been no changes in the material used nor in the method of manufacture of the tool.

Ladd Tool Company, Incorporated have submitted an affidavit showing that they have purchased all rights, assets etc. of Model UTI Stud Fastening System from U. S. Expansion Bolt Company, York, Pennsylvania, and that they are the owner-manufacturer of the system.

RECOMMENDATION: The Committee on Test recommends that the resolution adopted April 29, 1970 under Calendar 48-69-SA be reopened and amended so as to show a change of owner-manufacturer, new owner-manufacturer being Ladd Tool Company, Incorporated on condition that the requirements of the resolution adopted April 29, 1970 under Calendar 48-69-SA be complied with.

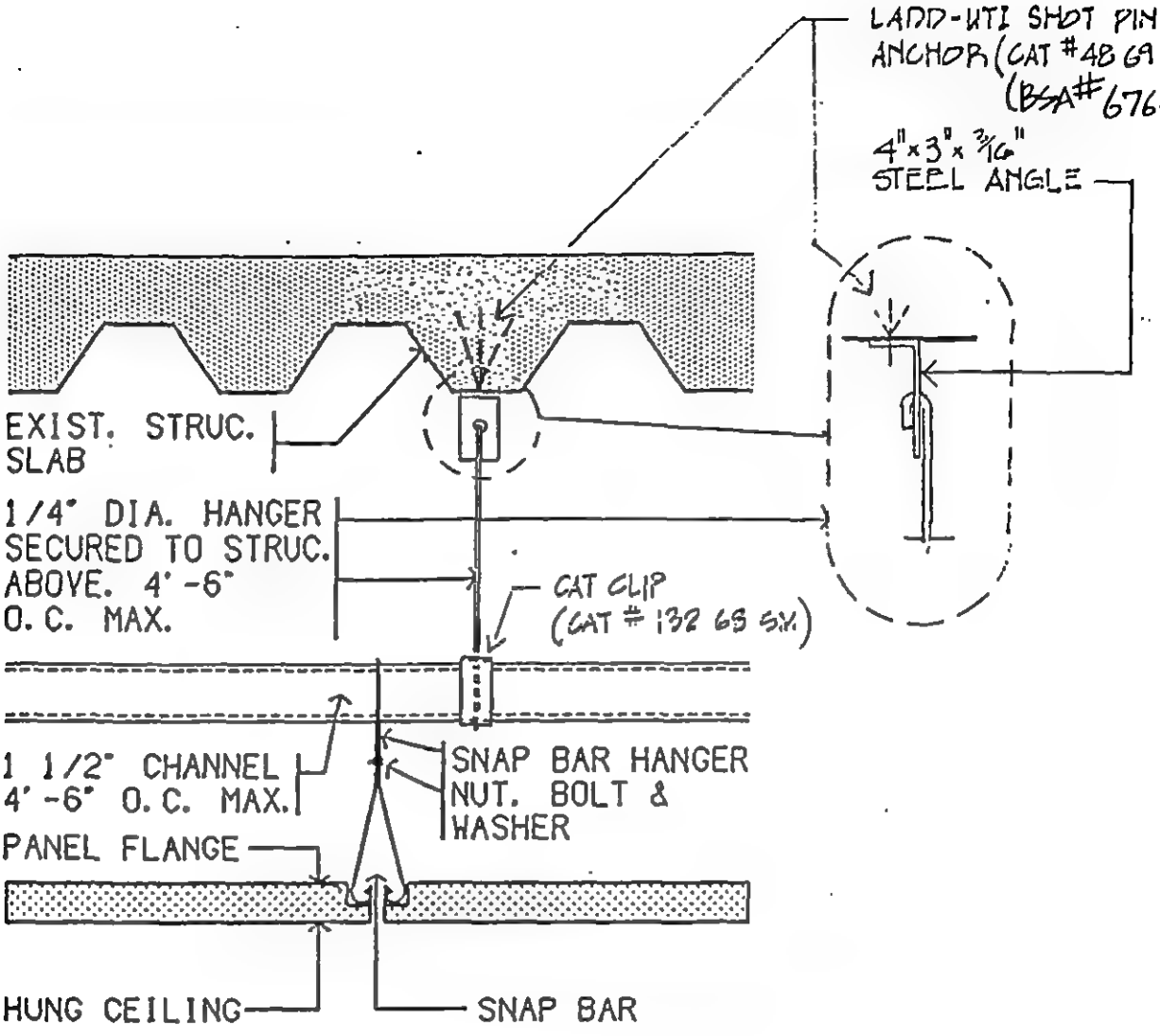
A sworn affidavit by a responsible officer of the manufacturer, familiar with the materials, processes and controls of the product manufactured, shall be filed annually with this Board, certifying that such materials, processes and controls are being maintained as were in effect at the time of this approval or previous approval under this Calendar Number. Failure to notify the Board of change of ownership, change of address or to submit the annual affidavit will be cause for revocation of approval.

(Sgd.) H. H. KARSON, A.I.A.,
Deputy Director,

JOHN A. DAATE,
Asst. Engr.,

STUART LOWENTHAL,
Asst. Engr.,
Committee on Test.

Resolved, that the Board of Standards and Appeals does hereby *extend* the above cited resolution in accordance with the above report.

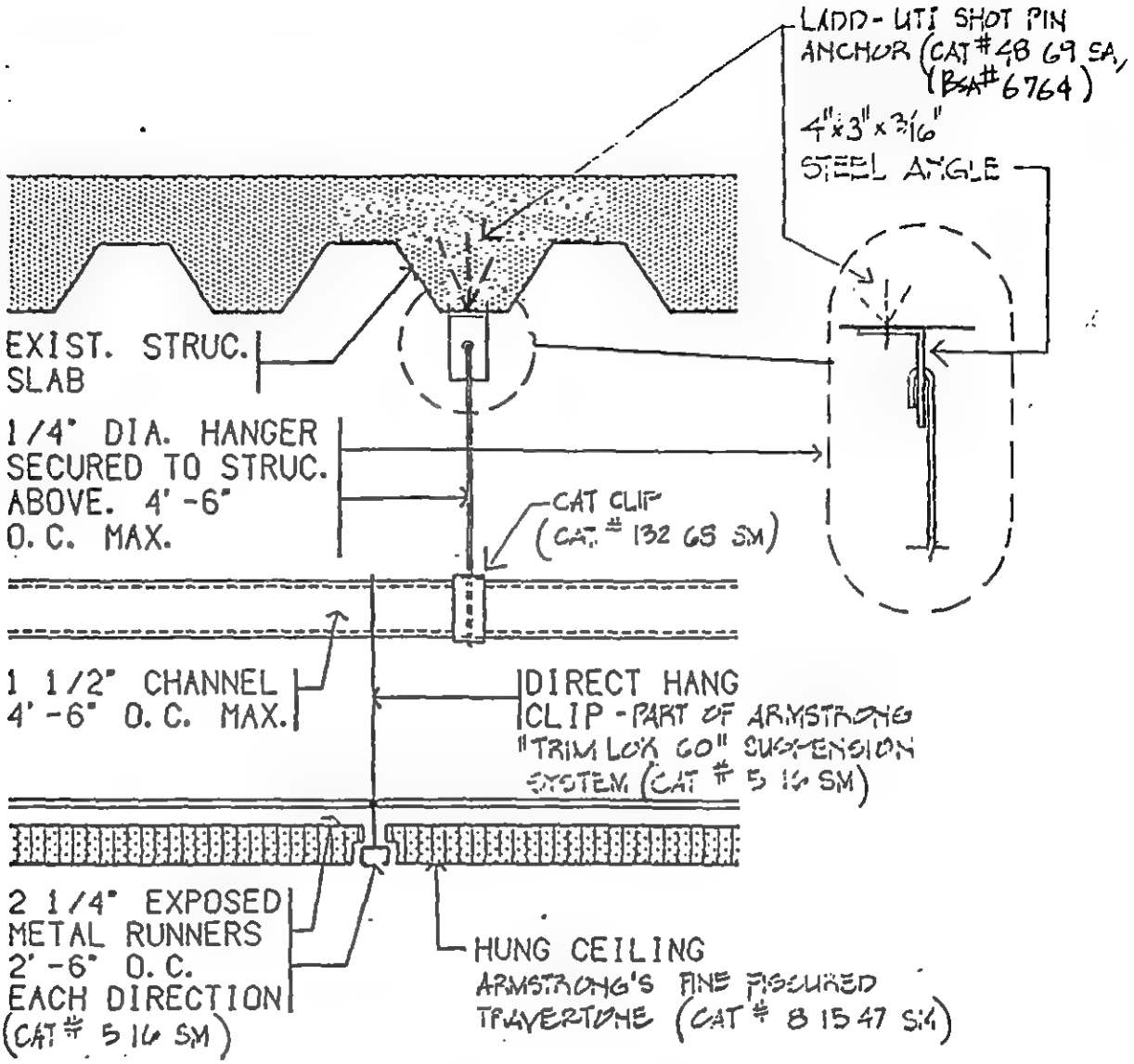


TYPICAL METAL PAN CEILING DETAIL

N.T.S.

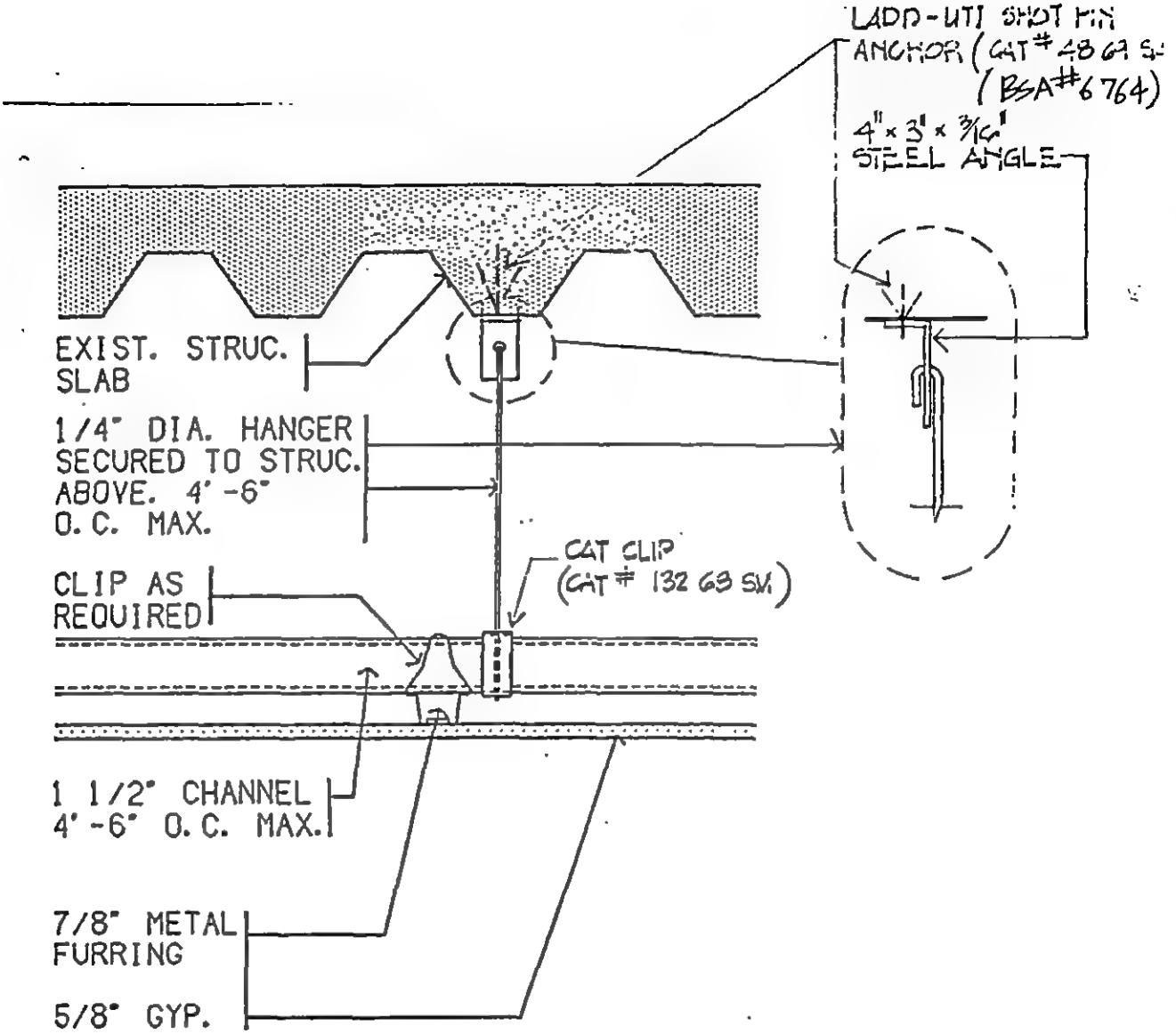
PRELIMINARY

REVISED



TYP. HUNG CLG. DETAIL W/EXPOSED RUNNERS

N.T.S.



TYPICAL GYPSUM WALLBOARD CEILING

1'-9

N.T.S.

ambric testing inc.

3600 crawford st.
philadelphia, pa.
19129
215-439-7944

PA COMMENT #9 (5)

August 10, 1979

Ladd Tool Company, Inc.
Lincoln Industrial Park
P.O. Box 467
West Chester, PA. 19380

Bd A Appeal # 676;

The following is a report of our tests to determine the loadbearing capacity of Ladd Ceiling Clips shot into concrete by you during your visit to our laboratories, June 29, 1979.

LABORATORY NO. 10209

DATA RELATIVE TO CONCRETE

Two Nominal 2' x 4' x 5' concrete slabs were cast in our laboratories of Class 3000 P.S.I. concrete.

TEST RESULTS

SLAB "A" DIRECT IN-LINE PULL

CLIP NO.	MAXIMUM LOAD SUSTAINED (lbs.)	CHARACTER OF FAILU
1	1650	Clip broke at hole
2	1620	Clip bent and bent pin
3	1790	Pin was extracted
4	1690	Clip bent, pin bent and pulled out
5	1720	Clip bent and slipped off end of pin
	Avg. 1694	

SLAB "B" - PULL @ 45° ANGLE – 1764 Avg.

Respectfully submitted,

AMBRIC TESTING, INC.

H.M. Carson, President

HMC/jmc

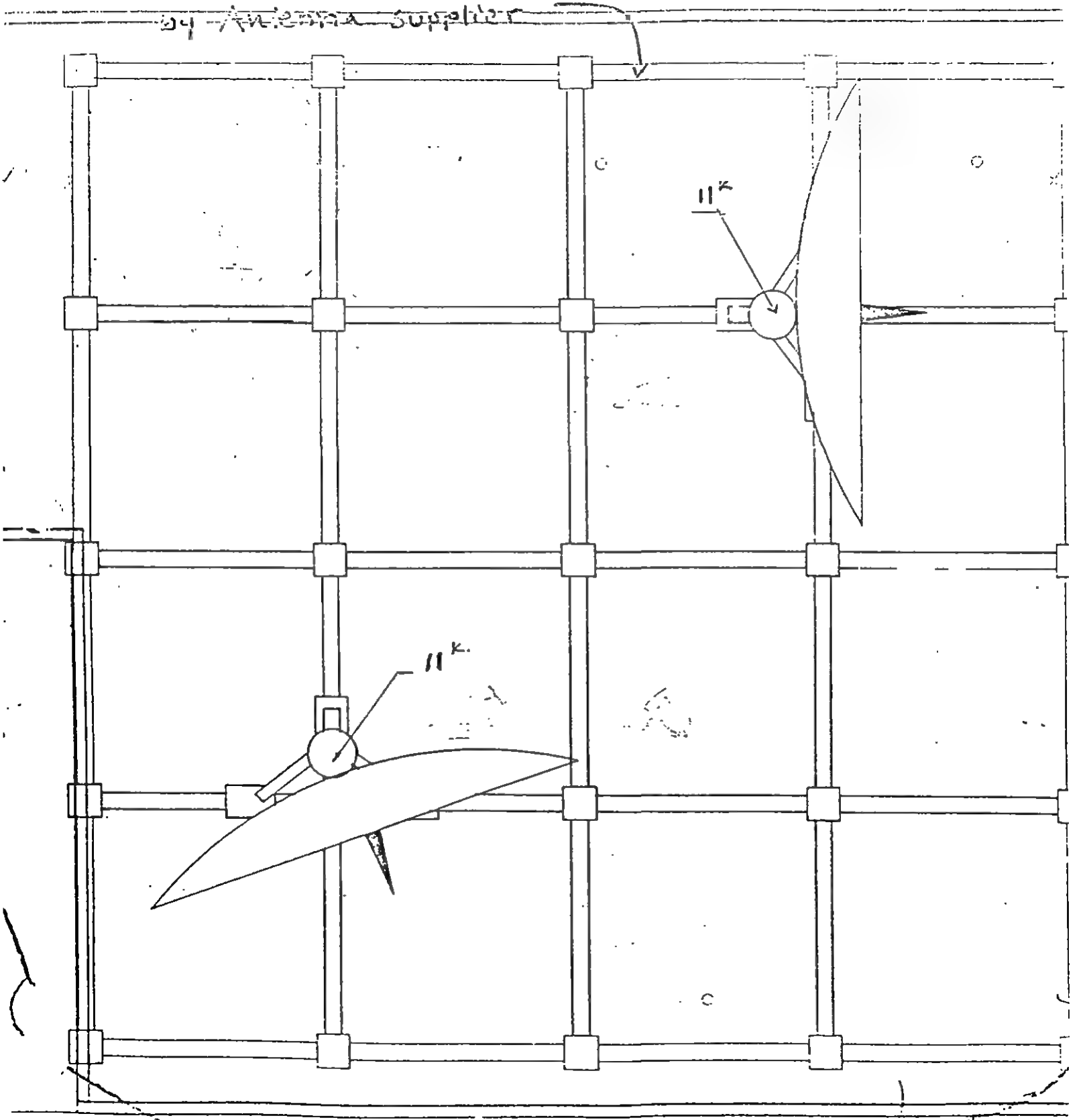
(6)

SATELLITE Antennas

STEEL DUNNAGE by Antenna supplier

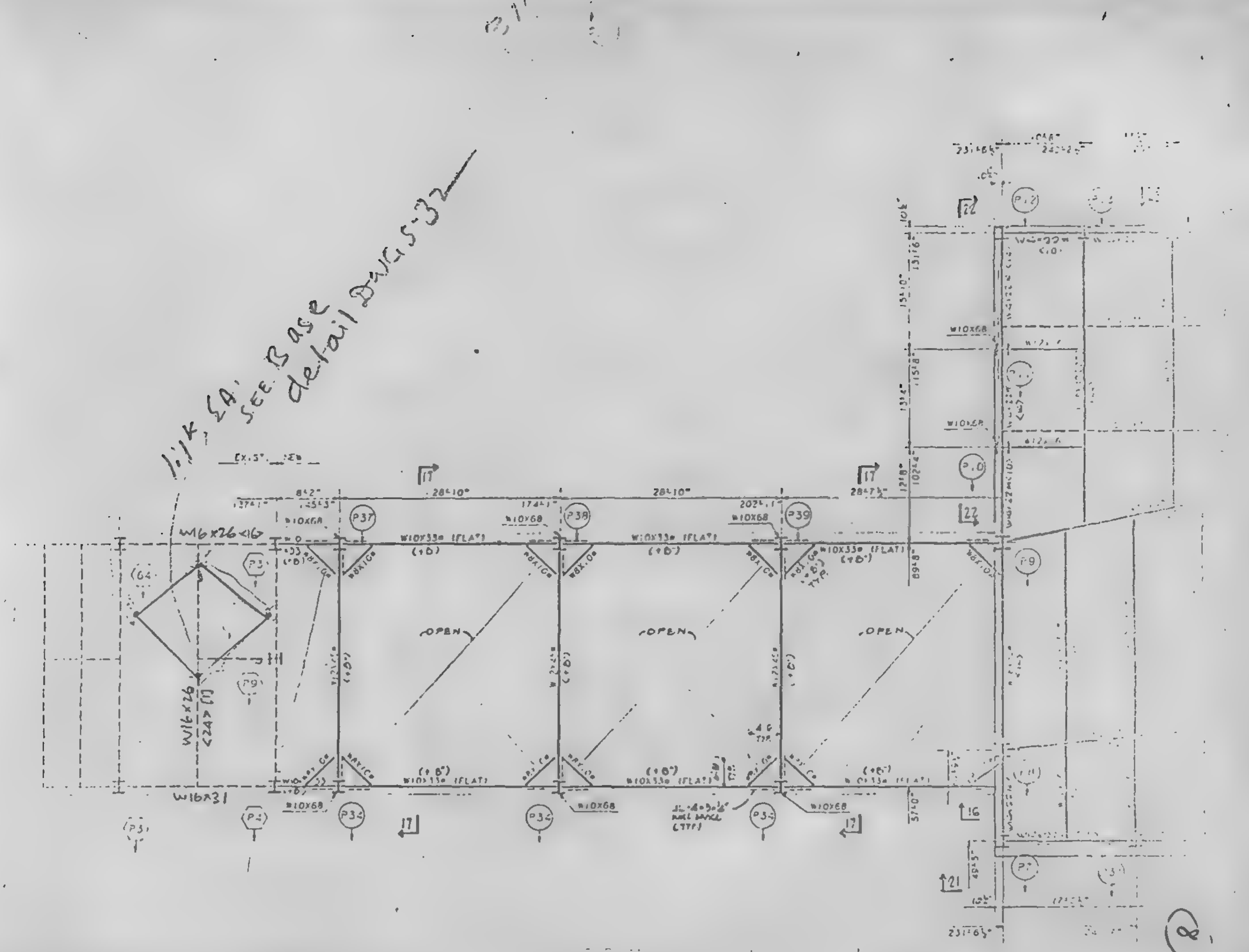
PA Comment No-10

7WZC



PART OF BULKHEAD FRAMING PLAN

FOR FRAMING SEE



1.1K, EA, SEE Base detail DWG 5-32
W16x26 <16>
W16x26 <24> [1]
W16x31
28'-10"
28'-10"
28'-7½"
W10X68
W10X68
W10X68
W10X68
W10X68
W10X68
W10X33 (FLAT)
W10X33 (FLAT)
W10X33 (FLAT)
OPEN
OPEN
OPEN
P37
P38
P39
P34
P9
P3
P4
17
17
17
17
22
22
16
21

OFFICE OF
... P.C.
Consulting Engineers
Manager Cutter Sands Group
219 EAST 42ND STREET
NEW YORK, N.Y. 10017
PHONE (212) 949-9150

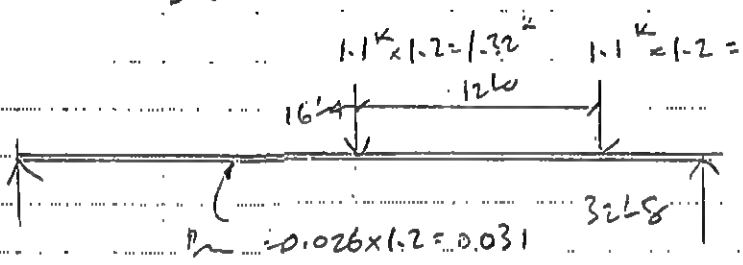
SHEET NO. 1 (9)
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____
SCALE _____

PA Comment No. 10

CHECK MICROWAVE TOWER LOAD ON BULKHEAD ROOF.

W16x26 <24> [1]

MICROWAVE SIGN EACH WT = 1.1^K



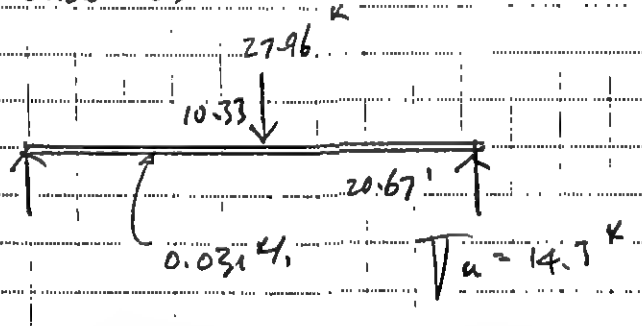
BH. ROOF =
D.L. SLAB 62
FILL & RFT = 10
CLG + MECH = 8
Pm = 7
87 x 1.2 = 0.104
LL 30 x 1.6 = 0.048
0.152 K/'

$V_u = 26.99$ 0.152 x 10.33 = 1.570 / 1.601 K/' $V_u = 27.96^K$

$+M_u^{16.33} = 218'^K = 315'^K$ b = 98

N = 24 ΣQ = 283
$Y_1 = 0.26$ ΣQ = 242 a = 0.83 $Y_2 = 6.08$
$\phi M = 315'^K$

W16x26 <16>



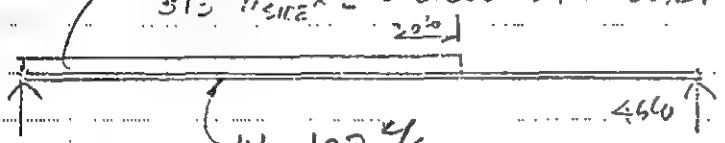
$+M_u^{10.33} = 146'^K < \phi M_p = 166'^K$ OK

CHECKED BY _____ DATE _____

SCALE _____

CHECK 6 TH & NORTH WING FLOOR FOR [illegible] < 26 > [1½]
FOR ELEC. CONDUIT LOADS.

CONC. 213
ELEC. COND. 100
313 #/SIDE × 2 = 0.626 #/ × 1.2 = 0.757 #/



$W_u = 1.27$ #/

$\gamma_u = 44.39^k$

$\bar{\gamma}_u = 36.56^k$

L = 46'

B = 9'-1" A = 418 SF.

LL use 60% = 31 PSF

D.L. Slab = 56

SD (12-7) = 19

75 × 1.2 = 0.090

LL 31 × 1.6 = 0.050

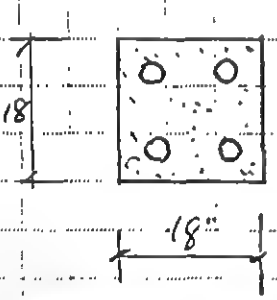
9.08 × 0.14 = 1.27 #/

$+M_u^{21.96} = 488^{'k} << 552$ CAPACITY

N = 26 EQ = 307 b = 108

$Y_1 = 2.9$ EQ = 260 a = .809

$Y_2 = 5.09$ $\phi M = 552^{'k}$ OK



18 × 18 = 324 in²

$\frac{\pi}{4} \times 6^2 \times 4 = 113$

211 in² × $\frac{145}{144}$ = 213 #

NOTE

- CONCRETE ENCASED CONDUITS will be supported from Beams only

THE PORT AUTHORITY OF NEW YORK & NEW JERSEY

M E M O R A N D U M

To: Mr. R. Linn, Deputy Director for Physical Facilities, WT&ED
From: Ennala Ramabhushanam
Date: March 13, 1989
Subject: WTC - ALTERATION APPLICATION #W-7004 - SALOMON BROTHERS - 7 WTC - BASE BUILDING MODIFICATIONS

Reference: Tenant Alteration Review Request, dated 2/21/89

Copy To: L. Sanchez A. Vaccaro Job Folder
Chrono Folder

A review of the material submitted with the referenced request for the subject application has been made.

It is recommended that approval to proceed be withheld pending submission of the items indicated below being revised in accordance with the sixty-three (63) requirements listed on the attached rider.

REMARKS: The attached Rider summarizes all the outstanding comments resulting from all the reviews to date. Those related to the "tenant stage" are carried forward as discussed in the working meetings of 2/10/89 and 2/13/89. It is expected that in responding to the Rider the tenant will categorize (with a symbol or otherwise) the "tenant stage" comments.

Ennala Ramabhushanam

Ennala Ramabhushanam, P.E.
Manager
Quality Assurance Division

JPV/dm
att.

RIDER

ALTERATION APPLICATION #V-7004

ARCHITECTURAL

*1. BS&A or MEA resolutions of approval are required for fire rated partitions, door assemblies and other opening protectives, as well as for raised floors, acoustical ceiling tiles, combustible insulation material, and firestopping material and combustible interior finishes. A copy of such resolution of approval shall be submitted for review. See Code Section C26-106.2)(a). (Repeat comment)

2. Dwg. #SK-1007, Fourth Floor - Egress Diagram. Identify the occupancy of the long space north of the core area. Clarify that egress from F-occupancy Dining Area complies with Code Section C26-801.9 regarding primary and secondary travel distances and exit capacities. (Repeat comment)

*3. Dwg. #SK-1009, 39th Floor - Egress Diagram. Substantiate that egress and travel distances from the Auditorium comply with the limitations of Code Table 8-1 and of Code Section C26-801.9 regarding primary and secondary travel. Also clarify the access to the centrally located existing stair. (Repeat comment)

4. Dwg. #A-35, 35th Floor. Regarding the new supplementary stair descending to, and terminating at, this floor level, establish the requirements for **EXIT** and **NO-EXIT** signs and indicate their locations. (Repeat comment)

5. Dwg. #A-35, 35th Floor Plan. According to Note #2 and triple asterisk at Passenger Elevators #P16 to P20, the floor is to be raised by 17 inches. Please clarify the extent of this raised floor and the effect of its height on the other elevators and on stairs, windows, doors and required ceiling spaces. (Repeat comment)

6. Dwg. #A-200, Toilet Plan and Details:

   a) At all similar toilet rooms the depth of at least one of the two entrance vestibules shall be increased to comply with the requirements of ANSI A117.1-1986 regarding physically handicapped persons.

   b) Establish the depth of the toilet stalls. (ANSI A117.1-1986)

   c) At Detail #5 establish size, spacing and anchoring of the indicated "steel channel posts" and the size and extent of the steel channel sill. (ANSI A117.1-1986) (Repeat comment)

7. Dwg. #A-2, Second Floor Plan, Auditorium. The basic plan shown shall be supplemented by a complete plan showing the seating, aisles, steps, stage, etc. Also, show dimensions, clarify the access to the Elevator Machine Room, and the function and/or occupancy classification of spaces where not yet shown. (N.Y.C. Building Code Section C26-110.2). (Repeat comment)

*8. Dwg. #A-2, Second Floor Plan. In order for the area north of the auditorium to be classified as a safe area, its clear width throughout shall be not less than eight (8) feet. Increase the width of the safe area legs at the auditorium doors to comply. Code Section C26-801.11(3). (Repeat comment)

9. Provide an updated egress analysis for the Second, Third and Fourth Floor reflecting the latest revisions at these floors, establishing occupant loads, exit capacities and travel distances. Revise the indicated capacity of the direct exit from the auditorium to the street to be not more than the capacity of the street level door minus the occupant load of the building stair also discharging through this door. See Code Articles 6 and 8. (Repeat comment)

10. Dwg. #A-3, Third Floor Plan:

    a) Identify the function and occupancy classification of spaces where missing. Also identify the intended use of the long closet along the side of the "Lounge".

    b) Clarify if the "Lounge" is still to be considered as part of the safe area at the Second Floor, in which case its serving a classroom, a staff room and a large locker room require to be justified.

    c) Clarify if the two (2) esacalators at the north side are to be used also as exits from the floor above, in which case their compliance with the requirements of Code Section C26-604.11 shall be substantiated. (Repeat comment)

11. Dwg. #A-4, Fourth Floor Plan. Show the relative extent of the dining, serving and kitchen areas, and identify partitions, guardrails and other enclosures. At dining areas show the room layout. Code Section C26-110.2. (Repeat comment)

*12. Dwg. #A-48, Main Roof Plan. Verify and substantiate that the egress from the areas or spaces at this level comply with the requirements of Code Table 6-1. (Repeat comment)

13. Dwg. #A-262, Bulkhead Elevations. Substantiate that the guardrail is designed to comply with the structural requirements of Code Section C26-902.3(b). (Repeat comment)

14. Dwg. #A-1. Clarify function and establish the Occupancy Group classification for space #01-000, WETWASTE. Verify that the existing envelope construction meets the fire resistance requirements for the occupancy. See C26-301.4 and Table 5-2.

15. Dwgs. #A-29, 30, 31, et. al. Provide layouts for pantries, indicating utilities required. C26-110.2.

16. Dwg. #A-39. Provide construction details for the auditorium and its support spaces. C26-100.2.

17. Dwgs. #A-39, 41, 43, et. al. Provide construction details of railings at areas open to the floor below. C26-110.2.

18. Dwgs. #A-39, 41, 43, et. al. Clarify access to occupiable spaces at the M.E.R. at the east end of the floor.

19. Specification #06100 - Carpentry. Revise specifications to require that all wood fastened to the building shall be treated to be fire retardant using the method prescribed in C26-502.6.

20. Specification #07200 - Building Insulation, extruded Polystyrene Board Insulation (Type 3). Provide documentation verifying compliance with the requirements for noncombustibility as defined in Article 2 of the Code.

21. Specification #07275 - Sprayed on Fireproofing. In the specifications or on the drawings, state the required thickness of fireproofing required for the various structural components to attain the fire resistance ratings required by Table 3-4 for the specific Construction Classification.

22. Specification #07350, Single Ply Roofing. Revise the specifications to include the requirement that roof coverings shall be Class A or B as listed in RS 5-9, or as determined by tests made in conformance with RS 5-10 for those not listed See C26-503.7(a). Provide verifying documentation.

STRUCTURAL

23. Submit computations for the additional framing around proposed floor openings, for all floors.

*24. Submit computations for the auditorium framing shown on Dwg. #S-14.

*25. The report on ceiling anchor tests describes only one test on a Ladd clip. This is not enough to recommend approval. Please revise the ceiling support details. (Repeat comment)

26. The design of the roof framing shall include the loads from the antennae shown on Dwg. No. 6-48.1. (Repeat comment)

*27. Verify that the concrete-encased cables shown on Dwg. #E-5 can be supported by the floor above. (Repeat comment)

ELECTRICAL

28. Dwg. #E-47. Clarify means for connecting the 30 HP smoke exhaust fan to an emergency power source. N.Y.C. Building Code RS 5-17, part 5(e).

*29. Dwgs. #A-5 and E-5. Provide two means of access to each of the network compartments. N.Y.C. Electrical Code Section B30-43.0-m.3.

30. Specifications, p. 16002-2, part B-2. Delete THWN wire insulation, and substitute a non-PVC type.

31. Dwgs. #A-35 and A-44 refer to battery rooms. Submit design for ensuring that there will be sufficient diffusion and ventilation of battery gases so as to prevent the accumulation of an explosive mixture. N.Y.C. Electrical Code Section B30-143.0.

*32. Dwgs. #E-5, E-R2: Expanded electric service. Submit complete information on equipment dimensions, clearances, transformer vault wall materials, conductor sizes, overcurrent device settings, containment of spilled transformer fluid and generator fuel, and the boundary separating the area under exclusive control of Con Edison from that under customer control. N.Y.C. Electrical Code sections 27-3048 (B30-44.1), 27-3045 (B30-43.0), 27-3047 (B30-44.0), 27-3272 (B30-246.0), 27-3274 (B30-248.0), 27-3275 (B30-249.0), and Bulletin No. 102-1967 (Revised), and NEC Sections 110-16 and 110-33. (Repeat comment)

33. Dwg. #E-R2. Justify tapping the 13.2KV feeders; clarify how overcurrent protection of the tap conductors is accomplished, and show the splice chamber on the plans. N.Y.C. Electrical Code sections 27-3093 (B30-82.0), 27-3292 (B30-266.0). (Repeat comment)

*34. Dwgs. #E-R1, E-R2. Submit short-circuit calculations and tabulation of short-circuit ratings for buses, fuses, switches, and circuit breakers, with corresponding values of short-circuit current. N.Y.C. Electrical Code sections 27-3047 (B30-44.0), 27-3048 (B30-44.1), 27-3067 (B30-59.0); NEC sections 110-9, 110-10. (Repeat comment)

35. ESA Voice and Data Cable Specifications, paragraph 2.a. Delete reference to areas having no fire suppression system, so that the referenced cables will be required whenever used outside of metallic raceway to traverse air circulation spaces. N.Y.C. Electrical Code Bulletin No. 126-Revised 1983, NEC Sections 770-6(c), 800-3(b)(3). (Repeat comment)

36. Flack & Kurtz Specifications, page 19, paragraph 7.c. Substitute non-PVC insulation for THW and THWN wiring.

37. Specifications section 14010, "General Conveying Systems Provisions." Add the N.Y.C. Electrical Code to the list of Reference Standards, part 1.02-B. (Repeat comment)

38. Code Analysis, re: response to comment numbers 8 through 21 of Quality Assurance Division memo dated 12/5/88. Submit revisions conforming with the response. (Repeat comment)

39. Code Analysis, re: response to comment number 22 of Quality Assurance Division memo dated 12/5/88. PVC wiring is prohibited indoors, even if run in conduit. (Repeat comment)

*40. Affix PE or RA seal and signature to all drawings. The "C" and "ELV" series of drawings have not been signed and sealed. N.Y.C. Building Code section 27-157 (C26-110.2). (Repeat comment)

MECHANICAL

*41. Dwg. #HVAC-1. For the new 6500 gallon underground fuel oil tank and piping indicated on the drawing, provide design details as required to demonstrate conformance with all applicable provisions of Subchapter 14, Article 17 of the N.Y.C. Building Code as well as 6NYCRR part 614: Standards for New and Substantially Modified Petroleum Storage Facilities. In contract documents please specifically address: secondary containment to collect and contain fuel leaks, leak monitoring system, anticorrosive protection of the tank and all associated underground piping, as well as pressure testing and inspection procedures. Please note that design details shown on Dwgs. #S-33 and HVAC-54 are contradictory and neither of them meet code requirements for the secondary containment of the potential fuel leak. See also comments #62 and 63 below.

42. Dwgs. #HVAC-2, HVAC-3 and HVAC-4. Provide and show on plans a separate dedicated shaft for the fuel oil risers in conformance with N.Y.C. Building Code, Section C26-1416.3.(f)5.

43. Dwg. #HVAC-5. In conformance with Code Section C26-1416.3(f).2, provide double wall construction for the horizontal fuel piping on the 5th floor. Indicate on the drawing the extent of such piping construction and cross-reference it to details and specifications.

44. Dwgs. #HVAC-5 and HVAC-6. Since outside air intakes shown on these drawings are in proximity of the existing Con Edison Substation venting louvers, please provide HVAC contract documents with clear description of the provision undertaken in this design to prevent the introduction of the potential substation fire into the building. See N.Y.C. Building Code RS 13-1, Sections 2-3.4.3. and 3-3.6. (Repeat comment)

45. Where modified sheet duct risers cross over to other shaft locations on numerous floors in the building, they shall either be enclosed in 2-hour rated construction (the same as required for shaft enclosures), or fire dampers and access doors shall be installed at the penetrations of all floor slabs and/or shaft walls in conformance with Code Section C26-504.6(c) and RS 13-1, Section 3-3. (Repeat comment)

46. Dwg. #HVAC-31. On the plan, part plan and section shown on this drawing clarify the functions of new duct risers as well as modified ducts and duct openings in the 31st floor MER. See Code Section C26-116.3.

47. Dwg. #HVAC-34. Please clarify how the new 60 x 12 toilet exhaust duct riser can be accommodated into the P29 elevator shaft.

48. Dwg. #HVAC-35. Please clarify a designation of Section A-A, which appears to be reversed. See Code Section C26-110.2.

*49. Dwg. #HVAC-35. Please indicate provisions for mechanical exhaust from the electrical storage battery room on this floor. See N.Y.C. Electrical Code, Section B30-143.0. Make same provisions for the 44th floor battery room indicated on architectural drawings.

50. Dwg. #HVAC-47. Provide part plans, sections and/or elevations as required to clarify the arrangements and functions of new ducts at new airshafts as well as both smoke exhaust fans. See Code Section C26-116.3.

51. Dwg. #HVAC-48. Show kitchen exhaust duct and fan arrangements for the 41st floor express food servery. See N.Y.C. Building Code RS 13-3.

52. Dwgs. #HVAC-48 and HVAC-49. Please remove discrepancies between these drawings that pertain to locations of kitchen exhaust fans and air conditioning unit AC-2. See Code Section C26-116.3.

*53. Dwgs. #HVAC-48 and HVAC-49. For new air handling units, provide and show on plans the physical locations of duct mounted smoke detectors in conformance with RS 13-1, Section 4-3. In addition - for air handling units with capacities greater than 15,000 CFM - provide the protection against combustion of air filter systems in conformance with requirements of RS 13-1, Section 2-4.1.2.

54. Dwg. #HVAC-54, Duct Hanging Detail. Please complete Note #2 to list maximum allowable spacings for duct hangers in conformance with RS 13-1, Section 2-1.1.2.3.(a).(5).

55. In conformance with requirements of N.Y.C. Building Code, Section C26-110.2, provide installation details for all types of new fans (smoke exhaust, kitchen exhaust, etc.), air handling units, expansion tanks, and other new base building system components to show their methods of support and anchoring to the building structure.

56. Provide installation details for all types of fire dampers intended to be used in this design. See Code Section C216-116.3.

57. Provide an installation detail of piping penetration through rated construction in conformance with all provisions of the Code Section C26-504.5.

*58. For all air handling systems, provide detailed sequences of operations, backed by air flow diagrams, if necessary, to demonstrate conformance with all provisions of the Code Section C26-1300.8, RS 13-1, Sections 2-4.1.2, 4-3 and 4-3.1. Also please describe all required interfacings between air handling systems and the existing Class E fire alarm and communication system in the building.

59. Design Guidelines VIII, Minimum Standards for Construction in New York City, Engineering Requirements - HVAC:

a) Add the requirements for Smoke Control in conformance with Code Section C26-1300.8.

b) For "General Requirements and Construction Requirements of Fuel Oil Storage Tanks" add requirements of the New York State.

Department of Environmental Conservation - GNYCRR: PART 612, Part 613 and Part 614.

c) Revise NFPA 90-A, 1967 to NFPA 90-A, 1981.

d) Revise NFPA 96, 1964 to NFPA 96, 1984.

e) Revise ANSI-B9.1, 1971 to ANSI-B9.1, 1978.

Tenant's, response could not be verified in material submitted for review. Therefore, the comment is repeated.

60. Specifications, Section 15502. 2.01.B.12.a. Specified thickness of diesel engine round exhaust pipe of 10 USSG is less than 3/16 inch required by the Code Section C26-1501.14.(a).(2). Please revise.

61. Specifications, Section 15503.1.05.D. Provide specifications for thermal insulation of the round diesel engine exhaust pipe. Also provide specifications for thermal insulations of kitchen exhaust ductwork and fans. See RS-13-3, Section 3-2.10.

62. Specifications, Section 15520.3.01.E. Specify underground piping anticorrosive protection in conformance with the requirements of NYCRR Part 614, Section 614.14.

63. Specification, Section 15520.3.01.H. Please revise this section to comply with all requirements of NYCCR Part 614: standards for new and substantially modified petroleum storage facilities.

N-7004 ?

Do not discard
Contains meeting notations

REFERENCES FOR THIS PACKAGE

1. P.A. TO S.O.M. COMMENTS
DATED NOVEMBER 2, 1988

2. S.O.M. TO P.A. RESPONSES
DATED NOVEMBER 9, 1988

I

ARCHITECTURAL

RIDER

ALTERATION APPLICATION #V-7004

COMMENT DATED 11/2/88

ARCHITECTURAL

ok

*1. On a title sheet provide the following:

a) A list of applicable codes and regulations.

b) A list of construction items requiring controlled inspection, such as sprayed-on fire protection if required (N.Y.C. Building Code Section 27-324 (C26-502.2)(f)); firestopping (Code Section 27-345 (C26-504.7)(h).

RESPONSE

Item #	~~Answer~~
1. a. ✓	List of applicable codes and regulations are part of code analysis which will be issued to P.A. on 11/7/88.
b. ✓	Will be pulled out of code analysis and incorporated into title sheet which will be issued to P.A. on 11/7/88.

COMMENT

✓ *2. BS&A or MEA resolutions of approval are required for fire rated partitions, door assemblies and other opening protectives; for raised floors, acoustical ceiling tiles, combustible insulation material, firestopping material and combustible interior finishes. A copy of such resolution of approval shall be submitted for review. (Code Section 27-131 (C26-106.2)(a)).

carry forward

see #20 of II

RESPONSE

2. BSA and MEA numbers will be attached to systems as they are issued.

(1)

ARCHITECTURAL

COMMENT

*3. Dwgs. #SK-1005 and SK-1006, Second and Third Floor, Egress Analysis for Second Floor Auditorium:

a) Establish the occupancy classification of the Auditorium and the related exit capacities per unit of width.

b) Justify the use of a floor level (the Third Floor level) as a safe area where the floor level is located more than 6 feet above the auditorium level and thereby in conflict with N.Y.C. Building Code Section 27-535 (C26-801.11).

c) The Third Floor plan on SK-1006 shows in its NE corner a stair descending from the floor above, but according to a note is carrying "Exit Load up from below." Clarify.

RESPONSE

3. a. This was part of the descriptive narrative attached to Egress diagrams issued as part of "scope" drawings and will be reissued on 11/7/88.

b. We considered this a base building system which we followed.

c. The note "exit load up from below" on sketch SK-1006 refers to the load coming up from the 2nd floor auditorium. In addition to this, there is a new stair in the N.E. corner carrying 150 persons down from the 4th floor.

COMMENT

*4. Dwg. #SK-1007, Fourth Floor - Egress Diagram. Identify the occupancy of the long space north of the core area. Clarify that egress from F-occupancy Dining Area complies with (Code Section 276-533 (C26-801.9) regarding primary and secondary travel distances and exit capacities.

RESPONSE

4. Travel distances are in the descriptive narrative attached to Egress diagrams issued as part of "scope" documents.

ARCHITECTURAL

COMMENT

5. Dwg. #SK-1008, 35th Floor - Egress Diagram:

a) Establish the total floor occupant load based on the appropriate occupant-floor area ratio from Code Table 6-2, and in accordance with Code Section 27-358 (C26-601.2) which requires the higher of the two possible occupant loads to be used in establishing the required exit capacity at a floor level.

b) Resolve the apparent conflict between the total occupant load, consisting of the occupant load of the 35th Floor and of the supplemental stair discharging at this floor level, and the available exit capacity of the two (2) existing stairs.

RESPONSE

5. a. Designation for this type of space is not listed on table 6-2, therefore code (27-358.a) allows the architect to determine occupant load. This floor will be predominantly computer equipment with very few occupants (25 max.).

✓ b. Floor loading shown on Egress diagrams and sections issued as part of "scope" drawings.

COMMENT

6. Dwg. #SK-1009, 39th Floor - Egress Diagram. Substantiate that egress and travel distances from the Auditorium comply with the limitations of Code Table 8-1 and of Code Section 27-533 (C26-801.9) regarding primary and secondary travel. Also clarify the access to the centrally located existing stair.

RESPONSE

6. Travel distances are in descriptive narrative attached to Egress diagrams issued as part of "scope" drawings.

ARCHITECTURAL

COMMENT

*7. An egress analysis shall be provided for each floor based on the larger of the two (2) possible occupant loads. The adequacy of the existing exit capacities and of travel distances to exits shall be established. (Code Section 27-358 (C26-601.2) and Table 6-1).

Ok

RESPONSE

7. Special floors have Egress diagrams. We took for granted that the base building stairs were adequate for typical office use and did not refigure. However, stairs are good for 300 people. Our layout will not exceed 300 people.

COMMENT

*8. Dwg. #A-35, 35th Floor. Regarding the new supplementary stair descending to, and terminating at, this floor level, the following is required:

Ok a) The existing stair and the new stair discharging its occupant load into it shall be directly connected by an exit passageway conforming to the requirements of Code Sections 27-232 (C26-201.0) (Definitions), and 27-370 (C26-604.3).

Ok b) The exit passageway requires a 2-hour fire rated enclosure, and only exit doors are permitted (Code Table 3-4 and Section 27-370 (C26-604.3)(f)).

Hold c) Establish the requirements for EXIT and NO-EXIT signs and indicate their locations.

RESPONSE

8. a. It does (area of refuge - NYC code 27.374)

b. Partition type and door ratings will be indicated on documents.

See package 10 1.20.89

c. Will be done on "tenant" documents.

ARCHITECTURAL

COMMENT

Hold *9. (Tenant 3.1.89)

Dwg. #A-35, 35th Floor Plan. According to Note #2 and triple asterisk at Passenger Elevators #P16 to P20, the floor is to be raised by 17 inches. Please clarify the extent of this raised floor and the effect of its height on the other elevators and on stairs, windows, doors and required ceiling spaces.

RESPONSE

9. Only passage elevator marked with asterisks will be raised as shown on drawings. "Tenant" drawings showing access floor extent will clarify why.

COMMENT

*10. Hold 3.1.89

Dwg. #A-200, Toilet Plan and Details:

a) At all similar toilet rooms the depth of at least one of the two entrance vestibules shall be increased to comply with the requirements of ANSI A117.1-1986 regarding physically handicapped persons.

b) Establish the depth of the toilet stalls. (ANSI A117.1-1986)

c) At Detail #5 establish size, spacing and anchoring of the indicated "steel channel posts" and the size and extent of the steel channel sill. (ANSI A117.1-1986)

RESPONSE

10. a. We are reusing base building toilets, fixtures, door, partitions, etc. which have been approved by P.A. and therefore considered legal.

b. Same as above

c. "posts" are drywall partition studs. Steel channel and saddle are size of door openings.

ARCHITECTURAL

COMMENT

11. Dwg. #A-250, Stair Details:

a) Provide information substantiating that all materials of raised floors to be installed at stair landings are non-combustible and that the finish flooring has non-slip qualities.

b) Provide additional details clarifying the coordination of the new raised landing with existing stair conditions.

c) At Detail #2 clarify the depth and reinforcing of the concrete fill at intermediate landings. -(Code-Section 27-375 - (C26-604.8)(h)).

RESPONSE

11 a. This will be confirmed when tenant specs for access floor is issued. Access floors throughout will be concrete filled metal pans. V.A.T. will be the finish in stairs.

b. Details and plans on A-250 are coordinated with existing stairs.

c. Depth of pan will be 2" minimum and shown on DWG A-250. Reinforcing will be indicated in concrete fill spec. to be issued 11/7/88.

COMMENT

12. Dwg. #A-255, Drywall Partition Details. At all head details clarify the type of the existing "structure" above. If a metal deck is used, indicate the required firestopping at voids over the partition.

RESPONSE

12. The existing structure, is a composite of metal deck and concrete. The firestopping detail on DWG A.256 will be issued 11/7/88.

ARCHITECTURAL

COMMENT

13. Dwg. #A-255, Partition Detail #11:

a) Indicate if the masonry wall is to have a fire rating and if the "underside of structure" above consists of a metal deck, in which case the effect on the required firestopping between wall and the metal deck shall be indicated.

See package #10 (1.20.79)

b) Verify if the steel angles' spacing is adequate for securing the firestopping in place, or if they require closer spacing or continuity. Also, indicate their anchoring.

RESPONSE

13. a. When we use the masonry partition it will have rating if required and firestopping detail will be included. This drawing was issued for the Drywall Partition details only at this time.

b. see 13a.

COMMENT

14. Suspended Ceiling Specifications. At the three (3) ceiling detail sheets taken from Code Reference Standard RS 5-16, revise the Cat Clip number of the runner channel attachment to read: "Cat Clip 4B1.5L, CAT #131-68-SM."

OK

RESPONSE

14. The "Cat" clip number I have used was received from the manufacturer. I will change the number if you will give me the appropriate backup.

END OF ARCHITECTURAL SECTION

STRUCTURAL

COMMENT

STRUCTURAL

11. Dwg. #A-35. Revise the layout of the spaces in the north-west corner to conform with that used in the structural calculations, and identify the use of these spaces.

RESPONSE

15. UPS Battery rooms will be identified on DWG. A-35 and issued 11/7/88.

END OF STRUCTURAL

ELECTRICAL

COMMENT

ELECTRICAL

[illegible] structural effects of surge conductor runs [illegible] with the Structural Consultant so that they will be submitted with the structural calculations. N.Y.C. Building Code Section 27-[illegible] (C26-901.2).

*17. Dwg. #E-R2 presents only a conceptual diagram of the service:

a) Submit plan drawings showing the location of the service, switchboard room, entrance doors, network protector compartments, and transformer vaults, including details of the construction of the walls and doors of vaults and network protector compartments.

b) Submit short-circuit calculations and short-circuit ratings of buses, fuses, switches, and circuit breakers.

See N.Y.C. Electrical Code Sections 27-3048 (B30-44.1); 27-3045 (B30-43.0); 27-3047 (B30-44.0); 27-3272 (B30-246.0), 27-3274 (B30-248.0), 27-3275 (B30-249.0); Bulletin No. 102-1967 (Revised); NEC Sections 110-9, 110-10., 110-16, 110-33.

18. Submit a one-line feeder diagram showing loads, feeder sizes, and overcurrent protective device trip ratings. N.Y.C. Electrical Code Sections 27-3174 (B30-157.0), 27-3093 (B30-82.0).

19. Dwg. #E-35. Show the Electric Room and give the dimensions for the switchboard and for access and working space. NEC Section 110-16(c); N.Y.C. Electrical Code Section 27-3127 (B30-115.0).

RESPONSE(S)

16 thru 19 - The electrical system will be part of December 19, 1988 issue. The reason the electric closets were shown on this issue (floors 7-35) is for location of openings in slab and any structural reinforcing required.

ELECTRICAL (continued)

COMMENT

[illegible] [illegible] [illegible] [illegible] [illegible] and exit [illegible] [illegible] [illegible] [illegible] Building Code Sections [illegible] (C26-[illegible]), [illegible] (C26-[illegible]), 27-[illegible] (C26-[illegible]) 27-[illegible] (C26-600.2); 27-[illegible] (C26-60[illegible].[illegible]).

RESPONSE

20 No comment.

END OF ELECTRICAL

HVAC

COMMENTS

HVAC

21. [illegible] provides outline of the design work for the building's core but does not contain sufficient design information (dimensions, design details, materials, construction methods, etc.) based on which such work can be reviewed for conformance with the N.Y.C. Building Code. See Code Section 27-157 (C26-110.[illegible]).

22. Where sheet metal duct risers cross over to other shaft locations on the [illegible] and [illegible] floors, they shall either be enclosed in [illegible]-hour rated construction, the same as required for shaft enclosures, or fire dampers and access doors shall be installed at the penetrations of all floor slabs and shaft walls in conformance with Code Section 27-344 (C26-504.6)(c) and RS 13-1, Section 3-3. Indicate such details on the drawings.

RESPONSE

21 & 22 HVAC systems for Base Building Modifications will be part of the December 19, 1988 issue. The branch ductwork will be issued in the tenant packages.

END OF HVAC

FIRE PROTECTION

COMMENT

23. Dwg. #P-26, Sprinkler System Note #1. Schedule 10 pipe is permitted for 2 1/2 inch diameter and above: for 2-inch diameter and below, schedule 40 threaded pipe and fitting shall be used. [illegible]

RESPONSE

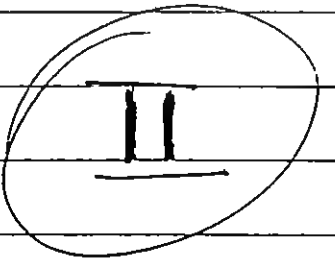
23. Notes on DWG P-26 will be revised and reissued on 11/7/88.

END OF FIRE PROTECTION

REFERENCES FOR THIS PACKAGE

1) P.A. TO S.O.M COMMENTS RIDER DATED 12/5/88

2) S.O.M. TO P.A. RESPONSES - LETTER DATED 12/21/88



RIDER

ALTERATION APPLICATION #W-7004

See #2

ARCHITECTURAL

1. Regarding response to comment #5(a) of Engineering/OAD Memorandum dated 11/2/88, 35th Floor, Occupancy and Egress:

   a) Except for spaces of a definitely different occupancy classification, the spaces on this floor shall be considered as E-occupancies in conformance with Code Table 3-2.

   b) In conformance with Code Section 27-358 (C26-601.2)(b), the indicated total floor occupant load of 25 persons shall be acceptable, provided that this number will be posted at the floor and will not be increased in the course of an alteration of the floor and/or its use. Any change in the use of this floor resulting in an increase of the stated occupant load (of 25 persons) shall require a separate revised egress analysis.

change to 300

2. BS&A or MEA resolutions of approval are required for fire rated partitions, door assemblies and other opening protectives, for raised floors, acoustical ceiling tiles, combustible insulation material, firestopping material, and combustible interior finishes. A copy of such resolution of approval shall be submitted for review prior to the installation of the materials. (Code Section 27-131 (C26-106.2)(a)). (Repeat comment)

carry forward (#2 of I)

3. Suspended Ceiling Specifications and Details. Verify that the submitted runner channel attachment identified as "Gat Clip 4B1.5L, CAT. #132-68-SM" has the load carrying capacity of "Gat Clip 4B1.5L, CAT, #131-68-SM", and submit a copy of the related BS&A resolution of approval.

OK

Point by point response to Port Authority of memo undated discussed at our meeting with the Port on December 12, 1988.

(3)

ARCHITECTURAL

Comment No. 1A. 35th floor occupancy is considered as "E" occupancy.

Comment No. 1B. We wish to make the occupancy load of the 35th floor 150 people which the stair capacity will handle. We have enclosed a revised egress analysis.

Comment No. 2. A copy of BSA or MEA resolutions will be submitted prior to installation.

Comment No. 3. "GAT clip 4B1-5L, Cat, #131-68-SM" Resolution attached.

(1)

COMMENTS

STRUCTURAL

*4. Calculation sheets MS1 - MS22 are based on the mezzanines being posted from the floor below, whereas the drawings (S-14, S-16, and S-18) show the mezzanines hanging from the floor above. Also, the post loads used in the calculations are less than the hanger load specified on Dwg. No. S-14. Revise calculations and resubmit.

*5. Detail 4/A-200 shows additional concrete for a raised slab. Clarify the location of this additional dead load and submit calculations for the affected beams.

*6. The Ladd shot pin shown in the ceiling details is not acceptable since it does not have BS&A approval, nor does it have Port Authority approval for use in 7 World Trade Center. The BS&A approval shown (No. 48-69-SA) applies only to the tool used to install the bolts. Please revise the detail and resubmit.

45

RESPONSES

STRUCTURAL

Comment No. 4. Calculation sheets for mezzanine hangers MS-1 thru MS-22 are enclosed herewith reflecting the reference to the hangers.

Post symbols have been revised to denote as hangers to match drawings S-14, S-16 and S-18. Hanger loads shown on drawings indicate the connection loads which have reserve capacity; this has been noted in enclosed computations.

Comment No. 5. Detail 4/A.200 shows 3 inch concrete for raised slab in toilet areas of trading floors. Trading floor is designed for 100 psf live load. The combined loading in raised slab areas is less than 100 psf; see enclosed computations. Any future raised slab areas if added at other locations will be checked as part of tenant work.

Comment No. 6. The ceiling system used presen
Center and tested in the presence of the Port A
is proposed to be used for new ceiling support.

COMMENTS

*7. The comment in the calculation book relating to the column design is noted. Approval cannot be recommended until these calculations are received.

RESPONSE

Comment No. 7. Computations for all affected with the December 19th, 1988 submission package

21 DEC

13

3

ELECTRICAL

8. Code Analysis, Applicable Codes. Add the Electrical Code of the City of New York and the National Electrical Code to the list of applicable codes.

9. Code Analysis, Suspended Ceilings, Section 5 - Installation. Re: Code reference 5.3.2, RS 5-16, maximum Fixture Weights. Add a requirement that fluorescent fixture installations be made in compliance with N.Y.C. Electrical Code Sections 27-3136 (B30-122.0)-q for recessed type, and -r for surface or pendant type. Note that this necessitates supporting recessed fluorescent fixtures from the channel iron (purlin) or the building structure if the fixture weight exceeds 40 pounds, and similarly for the supporting surface or pendant fluorescent fixtures regardless of fixture weight.

10. Code Analysis Electrical. Add the Code Article formerly numbered 28, "Radio Equipment," as it is pertinent to lighting protection for the microvave and satellite antennas.

11. Code Analysis Electrical. Re: Emergency Lighting, former Code Article 32. Add cross-references to N.Y.C. Building Code Sections 27-382 (C26-605.2), 27-384 (C26-606.2), and 27-396 (C26-610.1), and revise the reference given as C26-8101.18 to read, C26-801.18 (now Section 27-542).

12. Code Analysis, Electrical. Add the code article formerly numbered 33, "Circuits and Equipment Operating at more than 600 volts between conductors", as it is pertinent to the nev vork in the substation.

13. Code Analysis, Electrical. Add Bulletin 102-1967, "Rules and Regulations for Electric Services and Distribution Systems of over 250 volts and not more than 600 volts", as it is pertinent to the network compartments and distribution means.

14. Code Analysis, Electrical. Revise the reference given as Bulletin 126-1976 to read, Bulletin 126-Revised 1983, relating to wiring in ducts, plenums, and other air handling spaces, as the revision is pertinent to signal and communication cables.

15. Code Analysis, Electrical. Add National Electrical Code Article 110, "Requirements for Electrical Installation," which has particular application to short-circuit ratings, Sections 110-9 and 110-10, and to Electric Room working space and access, Sections 110-16 and 110-33.

16. Code Analysis, Electrical. Add National Electrical Code Articles 725, 760, 770, and 800, subject: Fire Resistance of Wires and Cables, pertaining to UL-listing requirements for low-voltage wires and cables.

(4)

14

17. Code Analysis, Electrical. Clarify that all requirements of the N.Y.C. Electrical Code, National Electrical Code, and N.Y.C. Building Code must be complied with, whether or not they are exemplified in the Code Analysis.

18. Code Analysis, Fire Alarm, re: Code Reference 1704.5(f). Add subpart (8), requiring smoke detectors at each elevator landing, and renumber references (8) and (9) to read as (9) and (10). The references given in the Code Analysis are obsolete.

19. Code Analysis, Fire Alarm, re: Code Reference 1704.6(a). Revise height above floor for sending stations to be four (4) feet, per current Code, Section 27-973(a)(2).

20. Code Analysis Fire Alarm. Add Code Section 27-971(g) (formerly under C26-1704.4) and Reference Standard RS 17-3A regarding Class E fire alarm signal systems.

21. Code Analysis, Fire Alarm. Add Code Section 27-969 (formerly C26-1704.2) regarding approvals and labeling requirements for fire alarm equipment.

22. Code Analysis. Add that the Port Authority prohibits the installation of PVC conduit and insulated wiring in the building's interior.

*23. Comment Numbers 16 through 20 of the Memorandum, A. Coras to R. Linn, dated 11/2/88, remain outstanding.

RESPONSES

ELECTRICAL

8. Will comply.

9. Will comply.

10. ESA will comply with Article 27 of the City of New York Electrical Code pertaining to lightning pretection.

5

11. Will comply.

12. Will comply.

13. Will comply.

14. ESA will comply with City of New York Electrical Code Bulletin No. 126-Revised 1983 related to signal and communications cables.

15. Will comply.

16. ESA will comply with Article 770 and 800 of NEC related to Ul-Listing of fiber optic and communications cable.

17. Will comply.

18. Will comply.

19. Will comply.

20. Will comply.

21. Will comply

22. Power wiring may use PVC wiring in conduit per NYC and National Electrical Codes. ESA will comply with NEC and CNYEC Codes which state that CM communications cable can be used in nonplenum spaces.

23. Comment numbers 16 through 20 of the memorandum, A. Coras to R. Linn, dated 11/2/88:

    16. Weights of conduits and cables will be fowarded to structural consultant.

    17. a) 12-19 issue locates arch. items.
        b) Short circuit calculations will be submitted when design is finalized.

    18. Existing base building risers conform to NYCEC section 27-3174. New riser of tenant suplemental power will be submitted when loads are fully identified.

    19. Electrical room layout will be determined as part of tenant work.

    20. Exit signs and exit lighting will be part of tenant work.

14

HVAC

*24. Submitted Dwgs. #HVAC-37, HVAC-38, HVAC-39, HVAC-42, HVAC-43 and HVAC-44 provide outline of the design work for the building's core but does not contain sufficient design information (dimensions, design details, materials, construction methods, etc.) based on which such work can be reviewed for conformance with the N.Y.C. Building Code. See Code Section 27-157 (C26-110.2).

25. Where sheet metal duct risers cross over to other shaft locations on the 37th and 42nd floors, they shall either be enclosed in 2-hour rated construction, the same as required for shaft enclosures, or fire dampers and access doors shall be installed at the penetrations of all floor slabs and shaft walls in conformance with Code Section 27-344 (C26-504.6)(c) and RS 13-1, Section 3-3. Indicate such details on the drawings.

26. Design Guidelines VIII, Minimum Standards for Construction in New York City, Engineering Requirements - HVAC:

a) Add the requirements for Smoke Control in conformance with Code Section 27-777.1 (C26-1300.8).

b) For "General Requirements and Construction Requirements of Fuel Oil Storage Tanks" add requirements of the New York State

HVAC

24. Refer to 12/19/88 and 12/20/88 issues of the HVAC drawings for additional information. Refer to 12/19/88 specifications for materials and methods of construction.

25. Will comply.

26. a. Will comply.

b. Will comply.

c. Will comply.

d. Will comply.

e. Will comply.

COMMENT

PLUMBING

*27. The emergency make-up water line to the 46th floor S.B.I tanks is not part of the base building scheme. A water meter shall be installed as per N.Y.C. Building Code Section P107.3.

120588

RESPONSE

PLUMBING

27. New building service shall have a separate water meter and connect to base building service.

REFERENCES FOR THIS PACKAGE

1.) P.A. TO S.O.M. COMMENTS DATED FEB. 13, 1989

2.) S.O.M. TO P.A. RESPONSE DATED

To: D. SULLIVAN S.O.M.
2/15/89

THE PORT AUTHORITY OF NEW YORK & NEW JERSEY

EMW

MEMORANDUM

To: Mr. R. Linn, Deputy Director for Physical Facilities, WT&ED
From: Arthur P. Coras
Date: February 13, 1989
Subject: WTC - ALTERATION APPLICATION #W-7004 - SALOMON BROTHERS - 7 WTC - BASE BUILDING MODIFICATIONS

Reference: Tenant Alteration Review Requests, dated 12/23/88, 1/5/89, and 2/9/89

Copy To: L. Sanchez A. Vaccaro Job Folder
Chrono Folder

A review of the material submitted with the referenced request for the subject application has been made.

It is recommended that approval to proceed be withheld pending submission of the items indicated below being revised in accordance with the tventy-seven (27) requirements listed on the attached rider.

PKG #8 & 7-12/19/88

DWGS DATED
12/22/89
D-5
+ A-1

JPV/dm
att.

Arthur P. Coras, P.E.
Manager
Quality Assurance Division

(1)

RIDER DATED 2/13/89

SENT TO D. SULLIVAN 2/15/89 VIA FAX

ARCHITECTURAL

COMMENT

ARCHITECTURAL

1. Dwg. #A-2, Second Floor Plan, Auditorium. The basic plan shown shall be supplemented by a complete plan showing the seating, aisles, steps, stage, etc. Also, show dimensions, clarify the access to the Elevator Machine Room, and the function and/or occupancy classification of spaces where not yet shown. (N.Y.C. Building Code Section C26-110.2).

Fold Forward

RESPONSE

COMMENT

2. Dwg. #A-2, Second Floor Plan. In order for the area north of the auditorium to be classified as a safe area, its clear width throughout shall be not less than eight (8) feet. Increase the width of the safe area legs at the auditorium doors to comply. (Code Section C26-801.11)(3))

WD (3.1.89)

RESPONSE

2/13/89

ARCHITECTURAL

COMMENT

3. Provide an updated egress analysis for the Second, Third and Fourth Floor reflecting the latest revisions at these floors, establishing occupant loads, exit capacities and travel distances. Revise the indicated capacity of the direct exit from the auditorium to the street to be not more than the capacity of the street level door minus the occupant load of the building stair also discharging through this door. See Code Articles 6 and 8.

RESPONSE

COMMENT

4. Dwg. #A-3, Third Floor Plan.

a) Identify the function and occupancy classification of spaces where missing. Also identify the intended use of the long closet along the side of the "Lounge".

b) Clarify if the "Lounge" is still to be considered as part of the safe area at the Second Floor, in which case its serving a classroom, a staff room and a large locker room require to be justified.

c) Clarify if the two (2) escalators at the north side are to be used also as exits from the floor above in which case their compliance with the requirements of Code Section C26-604.11 shall be substantiated.

RESPONSE

2/13/89

ARCHITECTURAL

COMMENT

5. Dwg. #A-3, Floor Plan. Identify the functions and occupancy classifications to be contained in the building area east of the main lobby, and the type and fire rating of its separation from the lobby. Note that this separation shall comply with the requirements of C26-720.0 (Atriums).

RESPONSE

Not SBS

COMMENT

6. Dwg. #A-4, Fourth Floor Plan. Show the relative extent of the dining, serving and kitchen areas, and identify partitions, guardrails and other enclosures. At dining areas show the room layout. (Code Section C26-110.2)

RESPONSE

will do

COMMENT

7. Dwg. #A-48, Main Roof Plan.

a) Clarify if new spaces have been added adjacent to the existing bulkhead and identify their functions.

b) Verify and substantiate that the egress from the areas or spaces at this level comply with the requirements of Code Table 6-1.

RESPONSE

COMMENT

8. Dwg. #A-262, Bulkhead Elevations. Substantiate that the guardrail is designed to comply with the structural requirements of Code Section 27-558. (C26-902.3)(b).

RESPONSE

N.D.

STRUCTURAL

2/13/89

COMMENT

STRUCTURAL

9. The report on ceiling anchor tests describes only one test on a Ladd clip. This is not enough to recommend approval. Please revise the ceiling support details. (Repeat comment)

RESPONSE

COMMENT

The design of the roof framing shall include the loads from the antennae shown on Dwg. No. 6-48.1.

RESPONSE

COMMENT

11. Verify that the concrete-encased cables shown on Dwg. #E-5 can be supported by the floor above.

RESPONSE

END OF STRUCTURAL

ELECTRICAL

2/13/89

COMMENT

*12. Dwgs. #E-5, E-R2: Expanded electric service. Submit complete information on equipment dimensions, clearances, transformer vault wall materials, conductor sizes, overcurrent device settings, containment of spilled transformer fluid and generator fuel, and the boundary separating the area under exclusive control of Con Edison from that under customer control. N.Y.C. Electrical Code sections 27-3048 (B30-44.1), 27-3045 (B30-43.0), 27-3047 (B30-44.0), 27-3272 (B30-246.0), 27-3274 (B30-248.0), 27-3275 (B30-249.0), and Bulletin No. 102-1967 (Revised), and NEC Sections 110-16 and 110-33.

(Modified repeat comment).

RESPONSE

COMMENT

13. Dwg. #E-R2. Justify tapping the 13.2KV feeders; clarify how overcurrent protection of the tap conductors is accomplished, and show the splice chamber on the plans. N.Y.C. Electrical Code sections 27-3093 (B30-82.0), 27-3292 (B30-266.0).

RESPONSE

COMMENT

*14. Dwgs. #E-R1, E-R2. Submit short-circuit calculations and tabulation of short-circuit ratings for buses, fuses, switches, and circuit breakers, with corresponding values of short-circuit current. N.Y.C. Electrical Code sections 27-3047 (B30-44.0), 27-3048 (B30-44.1), 27-3067 (B30-59.0); NEC sections 110-9, 110-10. (Modified repeat comment)

RESPONSE

2/13/89

ELECTRICAL

COMMENT

15. ESA Voice and Data Cable Specifications, paragraph 2.a. Delete reference to areas having no fire suppression system, so that the referenced cables will be required whenever used outside of metallic raceway to traverse air circulation spaces. N.Y.C. Electrical Code Bulletin No. 126-Revised 1983, NEC Sections 770-6(c), 800-3(b)(3).

RESPONSE

COMMENT

16. Flack & Kurtz Specifications, page 19, paragraph 7.c. Substitute non-PVC insulation for THW and THWN wiring.

RESPONSE

~~MECHANICAL~~ ELECTRICAL

COMMENT

17. Specifications section 14010, "General Conveying Systems Provisions." Add the N.Y.C. Electrical Code to the list of Reference Standards, part 1.02-B.

RESPONSE

2/13/89

ELECTRICAL

COMMENT

18. Code Analysis, re: response to comment numbers 8 through 21 of Quality Assurance Division memo dated 12/5/88. Submit revisions conforming with the response.

RESPONSE

COMMENT

19. Code Analysis, re: response to comment number 22 of Quality Assurance Division memo dated 12/5/88. PVC wiring is prohibited indoors, even if run in conduit. (Modified repeat comment)

RESPONSE

COMMENT

*20. Affix PE or RA seal and signature to all drawings. The "C" and "ELV' series of drawings have not been signed and sealed. N.Y.C. Building Code section 27-157 (C26-110.2). (Modified repeat comment)

RESPONSE

END OF ELECTRICAL

MECHANICAL

2/13/89

COMMENT

MECHANICAL

*21. Submitted HVAC dravings provide only an outline of the design work for the base building HVAC system modifications and do not contain sufficient design information (dimensions, design details, materials, constructin methods, etc.) based on which such work can be revieved for conformance with the N.Y.C. Building Code. Same applies to submitted outline specifications which are not included in contract documents for mechanical work in this building. See Code Section C26-110.2). (Modified repeat comment).
Detailed review will be performed when above information is received.

RESPONSE

COMMENT

22. Design Guidelines VIII, Minimum Standards for Construction in New York City, Engineering Requirements - HVAC:

a) Add the requirements for Smoke Control in conformance with Code Section C26-1300.8.

b) For "General Requirements and Constructions Requirements of Fuel Oil Storage Tanks" add requirements of the New York State Department of Environmental Conservation - GNYCRR: Part 612, Part 613 and Part 614.

c) Revise NFPA 90-A, 1967 to NFPA 90-A, 1981.

d) Revise NFPA 96, 1964 to NFPA 96, 1984.

e) Revise ANSI-B9.1, 1971 to ANSI-B9.1, 1978.

Consultant's response could not be verified as submitted for review materials, therefore, the comment is herein repeated.

RESPONSE

MECHANICAL

2/13/89

COMMENT

23. Dwg. #HVAC-1. For the new 6500 gallon fuel oil tank and piping indicated on the drawing provide part plans, sections and/or elevations as well as specifications and design details as required to demonstrate conformance with all applicable provisions of Subchapter 14, Article 17 of the N.Y.C. Building Code and standards for new and substantially modified petroleum storage facilities, 6NYCRR, Part 614.

RESPONSE

COMMENT

24. Dwgs. #HVAC-5 and HVAC-6. Since outside air intakes shown on these drawings are in proximity of the existing Con Edison Substation venting louvers, please provide HVAC contract documents with clear description of the provision undertaken in this design to prevent the introduction of the potential substation fire into the building. See N.Y.C. Building Code RS 13-1, Sections 2-3.4.3. and 3-3.6.

RESPONSE

COMMENT

25. Where modified sheet metal duct risers cross over to other shaft locations on numerous floors in the building, they shall either be enclosed in 2-hour rated construction, (the same as required for shaft enclosures) or fire dampers and access doors shall be installed at the penetrations of all floor slabs and/or shaft walls in conformance with Code Section C26-504.6(c) and RS 13-1, Section 3-3. (Repeat comment)

RESPONSE

MECHANICAL

2/13/89

COMMENT

26. Dwg. #HVAC-47. Provide part plans, sections and/or elevations as required to clarify the location, connection points and coordination with O.A. ducts for the new 64 x 48 smoke exhaust system duct section. See Code Section C26-110.2. Also provide in this duct the code required opening protectives at penetrations of all rated partitions in conformance with RS 13-1, Section 3-3. (Repeat comment)

RESPONSE

COMMENT

27. Dwg. #HVAC-48. For new air handling units, provide and show on the plans the physical locations of duct mounted smoke detectors in conformance with RS 13-1, Section 4-3. The same requirement is applicable to the air handling units with capacities greater than 15,000 cfm. Show the protection against combustion of air filter systems in conformance with requirements of RS 13-1, Section 2-4.1.2.

RESPONSE

END OF MECHANICAL

PA 2127
1-85

TENANT ALTERATION REVIEW REQUEST

✓	CHECK APPLICABLE ROUTING	ROOM NO.
	Engineering (T.C.R.U.) 51	[redacted]
	Risk Management – JSTC – Zip 43	6 FL
	Operations Standards – JSTC – Zip 75	5 FL
	Terminal Properties Div.	56S
	Control Desk	
	Facility Manager –	
	Port Dept. – Planning Div.	64S
	Aviation Technical Services Div.	65S
	Air Terminal Properties Div.	
	JFK – Business Administration – Zip 6	
	NIA – Business Administration – Zip 19	
	Marine Development & Rentals Div.	71E
	Inspection & Safety	
✓	Resident Engineer P. CAVANAGH	38
	L. SANCHEZ	
	E. McNIERNEY	

Description of Work:

REVIEW OF BASE BUILDING DRAWINGS (PKG #10) - SUBMISSION OF 1/20/89

FACILITY 7 WTC

APPLICANT'S NAME SALOMON BROS

APPLICATION NO. W 7004

DRAWING NO(S). PER ATTACHED LIST

DATE 2, 21, 89

☑ You are requested to review the attached application and forward your comments to:

☐ Attached are revised drawings. Please review only those items on which exception was previously taken and send your comments to:

Org. Unit	Room No.	Contact	Ext.
812	74 S	L. SANCHEZ	8566

No later than MARCH 22, 1989

PROJ. ADMINISTRATOR
Title

If no reply is received by above date, your concurrence will be assumed unless arrangements have been made for additional time for review.

FOR USE OF REVIEWING DEPARTMENT

COMMENTS: (Use reverse side if necessary) Indicate next to each comment whether it is a condition or recommendation.

ATTACHED: (3 COPIES OF EA.)

- SPECIFICATIONS DATED JAN. 20, 1989
- DRAWING LIST OF CHANGES DATED JAN. 20, 1989
- OVERVIEW OF SCOPE OF WORK SALOMON / SANCHEZ DATED FEB. 10, 1989

N.B. – THESE DRAWINGS ARE NOTED PACKAGE #10 BY WT PLANNING.

THE PORT AUTHORITY OF N.Y. & N.J.
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FEB 22 1989
4-7004 (7)
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(Please check applicable box)

☐ Approved ☐ Approved with Conditions and Recommendations Noted Above ☐ Disapproved with Requirements for Approval Noted Above ☐ Disapproved for Reasons Noted Above

Signature	Title	Date
		/ /

SOM

PACKAGE I

Ref. No. 6234-0008

PKG
I

November 4, 1988

Mr. Manuel Fernandez
Salomon Brothers Inc.
Two New York Plaza, 34th Fl.
New York, NY 10004

Project: 7 World Trade Center
Subject: Answers to Port Authority

Dear Manuel:

Enclosed are "item by item" answers to Port Authority unreleased memorandum from Arthur P. Coras dated October 31, 1988.

We have addressed all the items despite the fact that most of the questions are not relative to the October 17, 1988 package issued to the Port Authority. The October 17, 1988 issue dealt with floors 7 through 35.

Very truly yours,

SKIDMORE, OWINGS & MERRILL

Warren J. Mathison
Associate Partner

WJM:ar

Enc.

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NM
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THE PORT AUTHORITY OF N.Y. & N.J.
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W-7004
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Official Copy

Skidmore, Owings & Merrill
220 East 42nd Street, New York, New York 10017
212 309-9500, Telex 620590

Item #		Answer
1.	a.	List of applicable codes and regulations are part of code analysis which will be issued to P.A. on 11/7/88.
	b.	Will be pulled out of code analysis and incorporated into title sheet which will be issued to P.A. on 11/7/88.
2.		BSA and MEA numbers will be attached to systems as they are issued.
3.	a.	This was part of the descriptive narrative attached to Egress diagrams issued as part of "scope" drawings and will be reissued on 11/7/88.
	b.	We considered this a base building system which we followed.
	c.	The note "exit load up from below" on sketch SK-1006 refers to the load coming up from the 2nd floor auditorium. In addition to this, there is a new stair in the N.E. corner carrying 150 persons down from the 4th floor.
4.		Travel distances are in the descriptive narrative attached to Egress diagrams issued as part of "scope" documents.
5.	a.	Designation for this type of space is not listed on table 6-2, therefore code (27-358.a) allows the architect to determine occupant load. This floor will be predominantly computer equipment with very few occupants (25 max.).
	b.	Floor loading shown on Egress diagrams and sections issued as part of "scope" drawings.
6.		Travel distances are in descriptive narrative attached to Egress diagrams issued as part of "scope" drawings.
7.		Special floors have Egress diagrams.We took for granted that the base building stairs were adequate for typical office use and did not refigure. However, stairs are good for 300 people. Our layout will not exceed 300 people.

G.L.

I

8. a. It does(area of refuge - NYC code 27.374)

b. Partition type and door ratings will be indicated on documents.

c. Will be done on "tenant" documents.

9. Only passage elevator marked with asterisks will be raised as shown on drawings. "Tenant" drawings showing access floor extent will clarify why.

10. a. We are reusing base building toilets, fixtures, door, partitions, etc. which have been approved by P.A. and therefore considered legal.

b. Same as above

c. "posts" are drywall partition studs. Steel channel and saddle are size of door openings.

11 a. This will be confirmed when tenant specs for access floor is issued. Access floors throughout will be concrete filled metal pans. V.A.T. will be the finish in stairs.

b. Details and plans on A-250 are coordinated with existing stairs.

c. Depth of pan will be 2" minimum and shown on DWG A-250. Reinforcing will be indicated in concrete fill spec. to be issued 11/7/88.

12. The existing structure, is a composite of metal deck and concrete. The firestopping detail on DWG A.256 will be issued 11/7/88.

13. a. When we use the masonry partition it will have rating if required and firestopping detail will be included. This drawing was issued for the Drywall Partition details only at this time.

b. see 13a.

14. The "Gat" clip number I have used was received from the manufacturer. I will change the number if you will give me the appropriate backup.

15. UPS Battery rooms will be identified on DWG. A-35 and issued 11/7/88.

I

16.thru 19 - The electrical system will be part of December 19, 1988 issue. The reason the electric closets were shown on this issue (floors 7-35) is for location of openings in slab and any structural reinforcing required.

20 No comment.

21 & 22 HVAC systems for Base Building Modifications will be part of the December 19, 1988 issue. The branch ductwork will be issued in the tenant packages.

23. Notes on DWG P-26 will be revised and reissued on 11/7/88.

SOM PACKAGE II

Ref. No. 6234-0015

December 21, 1988

RECEIVED
DEC 29 1988

Mr. Manuel Fernandez
Salomon Brothers Inc.
One New York Plaza
New York, New York 1004

Re: Port Authority comments on drawing/meeting held at Port Authority 12/12/88.

Dear Manuel:

Enclosed is "point by point" response to Port Authority memo undated discussed at a meeting with the Port Authority on December 12, 1988.

We have included the BSA Sheet for the "Cat Clip" mentioned in the Port memo along with structural calculations and a revised egress diagram for the 35th floor as discussed with you.

I believe this package answers all the questions raised at the 12/12/88 meeting.

Sincerely,

SKIDMORE, OWINGS & MERRILL

Warren Mathison

Warren Mathison
Associate Partner

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W-7004
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Office Copy

(7)

Skidmore, Owings & Merrill
220 East 42nd Street New York, New York 10017
2 2 [illegible], Telex 620590

Letter 12/21/88

Point by point response to Port Authority of memo undated discussed at our meeting with the Port on December 12, 1988.

ARCHITECTURAL

Comment No. 1A. 35th floor occupancy is considered as "E" occupancy.

Comment No. 1B. We wish to make the occupancy load of the 35th floor 150 people which the stair capacity will handle. We have enclosed a revised egress analysis.

Comment No. 2. A copy of BSA or MEA resolutions will be submitted prior to installation.

Comment No. 3. "GAT clip 4B1-5L, Cat, #131-68-SM" Resolution attached.

STRUCTURAL

Comment No. 4. Calculation sheets for mezzanine hangers MS-1 thru MS-22 are enclosed herewith reflecting the reference to the hangers.

Post symbols have been revised to denote as hangers to match drawings S-14, S-16 and S-18. Hanger loads shown on drawings indicate the connection loads which have reserve capacity; this has been noted in enclosed computations.

Comment No. 5. Detail 4/A.200 shows 3 inch concrete for raised slab in toilet areas of trading floors. Trading floor is designed for 100 psf live load. The combined loading in raised slab areas is less than 100 psf; see enclosed computations. Any future raised slab areas if added at other locations will be checked as part of tenant work.

Comment No. 6. The ceiling system used presen
Center and tested in the presence of the Port A
is proposed to be used for new ceiling support.

Comment No. 7. Computations for all affected
with the December 19th, 1988 submission package

21
DFC
QA
<
DAC

ELECTRICAL

8. Will comply.

9. Will comply.

10. ESA will comply with Article 27 of the City of New York Electrical Code pertaining to lighting pretection.

11. Will comply.

12. Will comply.

13. Will comply.

14. ESA will comply with City of New York Electrical Code Bulletin No. 126-Revised 1983 related to signal and communications cables.

15. Will comply.

16. ESA will comply with Article 770 and 800 of NEC related to Ul-Listing of fiber optic and communications cable.

17. Will comply.

18. Will comply.

19. Will comply.

20. Will comply.

21. Will comply

22. Power wiring may use PVC wiring in conduit per NYC and National Electrical Codes. ESA will comply with NEC and CNYEC Codes which state that CM communications cable can be used in nonplenum spaces.

23. Comment numbers 16 through 20 of the memorandum, A. Coras to R. Linn, dated 11/2/88:

    16. Weights of conduits and cables will be fowarded to structural consultant.

    17. a) 12-19 issue locates arch. items.
        b) Short circuit calculations will be submitted when design is finalized.

    18. Existing base building risers conform to NYCEC section 27-3174. New riser of tenant suplemental power will be submitted when loads are fully identified.

    19. Electrical room layout will be determined as part of tenant work.

    20. Exit signs and exit lighting will be part of tenant work.

HVAC

24. Refer to 12/19/88 and 12/20/88 issues of the HVAC drawings for additional information. Refer to 12/19/88 specifications for materials and methods of construction.

25. Will comply.

26. a. Will comply.

    b. Will comply.

    c. Will comply.

    d. Will comply.

    e. Will comply.

PLUMBING

27. New building service shall have a separate water meter and connect to base building service.

131-68-SM

MANUFACTURER'S NAME—Erico Products, Incorporated, owner.

REPRESENTED BY—Gene Carraro.

SUBJECT—To include channel clamp Models 4B1.5LS and 4B2LS.

APPEARANCES—

For Manufacturer: None.

ACTION OF BOARD—Applications Reopened and resolution amended in accordance with the report and recommendations of Committee on Test.

THE VOTE TO GRANT—

Affirmative: Chairperson Deutsch, Vice Chairman Fosella, Commissioner Carroll, Commissioner Bookman, Commissioner Irizarry and Commissioner Tamas 6

Negative 0

THE RESOLUTION—

WHEREAS, the report of a Committee on Test reads:

131-68-SM: Amendment to the resolution to include Channel Clamp Models 4B1.5LS and 4B2LS.

Erico Products, Incorporated, Mountainside, New Jersey requests that the resolution adopted July 23, 1968 be reopened and amended to include Caddy Cat Channel Clamp-side mount type Models 4B1.5LS and 4B2LS.

PROPOSED USE—Clamp to attach Lathers Channel to ½ inch Rod.

DESCRIPTION—There are two models of the Caddy Cat Channel Clamp. Model 4B2LS is designed for a 2" Lathers Channel and can support a 250 lb. load. Model 4B1.5LS is designed for 1½" Lathers Channel and can support a 200 lb. load. Both clamps are made of the same material with the same thickness and width except that a longer piece of metal is used to manufacture clamp 4B2LS which has a larger configuration.

The CADDY Cat Channel Clamp is a heat treated spring steel fastener 0.036 inches thick and 0.75 inches wide which provides a positive lock and is made to fit ½ rod. The clamp is designed so that it can be placed on the rod through side openings. It is readily adjustable to provide proper leveling. When the lathers channel is snapped into the clamp, the channel is securely gripped to prevent movement of the channel on the rod.

INSPECTION AND TEST—The above clamps were tested by Pittsburgh Testing Laboratories file no. CLE-2234 P.O. #11066 dated May 14, 1986. The lowest ultimate failure load for the 4B2LS clamp was 1,000 lbs. and for the 4B1.5LS was 870 lbs.

RECOMMENDATION—The Committee on Test recommends that the resolution adopted July 23, 1968 be *reopened and amended* to include Caddy Cat Channel Clamps Models 4B1.5LS and 4B2LS *on condition* that the maximum load for the 4B1.5LS clamp does not exceed 200 lbs. and for the 4B2LS clamp does not exceed 250 lbs. and *on further condition* that all uses, locations and installations shall conform to Reference Standard RS-5 of the Building Code of the City of New York and the manufacturer's installations recommendations.

The descriptive information about this item, including brochures, catalogues, bulletins etc., as well as all product labels, packaging, and where possible, the item itself, shall be labeled with the wording: "Approved by the New York City Board of Standards and Appeals under Calendar Number 131-68-SM".

A sworn affidavit by a responsible officer of the manufacturer familiar with the materials, processes and controls of the product manufactured, shall be filed annually with this Board, certifying that materials, processes, controls and labeling of materials, literature, catalogues, bulletins and packaging are being maintained as were in effect at the time of this approval under this Calendar Number. Failure to notify the Board of change of ownership, change of corporate name, change of address or to submit the annual affidavit will be cause for revocation of approval.

(Sgd.) KATHLEEN A. CARNEY,
Executive Director
For the Committee on Test
MARK JACHIMIEWICZ, P.E.
Committee on Test

Resolved, that the Board of Standards and Appeals does hereby *amend* the above cited *resolution* in accordance with the above report.

Adopted by Board of Standards and Appeals, October 28, 1986.

A true copy of resolution adopted by the Board of Standards and Appeals, October 28, 1986.
Printed in Bulletin No. 45, Vol. LXXI.

Sylvia Deutsch

Chairperson.

Copies Sent
To Applicant
Fire Com'r.
Borough Supt.

Member of the New York Stock Exchange, Inc.

One New York Plaza
New York, N.Y. 10004 (212) 747-7000

Salomon Brothers Inc

THE PORT AUTHORITY OF N.Y. & N.J.
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office copy FEB 22 1989
W-2004 (2)
ALTERATION APPLICATION

February 10, 1989

Mr. Luciano Sanchez
World Trade Center Planning
Port Authority of New York and New Jersey
1 World Trade Center
New York, NY 10048

Re: Salomon Brothers Drawings Submission of 1/20/89
Overview of Scope of Work

Dear Luciano:

Per our meeting this morning with Port Authority personnel and Salomon Brothers' consultants, below is a narrative description of the scope of work presented in our 1/20/89 construction documents.

The 1/20/89 set is comprised of the following:

- All Port Authority comments have been answered through construction document revisions to the following previous drawings issues (9/15/88, 10/6/88, 10/17/88, 10/31/88, 11/7/88, 11/21/88, 12/19/88 (1), 12/19/88 (2), 12/22/88).
- Relocation of existing base building mechanical, plumbing and electrical elements affecting the new shuttle elevators (P29, P30).
- Reconfiguration of west core area rooms (mechanical, electrical, mail and communications).
- Toilet locations and scope of work established on floors 40 and 42.
- Minor dimensional changes on previously approved structural demolition drawings to accommodate field conditions.
- Corrections to all plans to indicate properly shaded and unshaded areas depicting non-demised and demised spaces per Lease and Silverstein comments.
- Addition of Salomon Brothers base building electrical, HVAC and plumbing/fire protection plant as follows:

HVAC

Added chilled water refrigeration plant on roof.
Added SBI cooling towers.
Modified Base Building condensing water risers.
Relocated fresh air shaft and added conditioned supply air.
Added condenser water and chilled water risers for SBI.
Removed nine (9) fan rooms (DX units to be relocated).
Added forced ventilation fans for standby generators.
Added to and modified fuel oil storage system.

Plumbing/Fire Protection

Added cooling tower make-up water system.
Added penthouse MER roof drain system.
Added new roof drains required for existing roof.
Added new domestic water service into meter room.
Added plenum drains and piping.
Deleted floor drains from tenant floor MER rooms.
Deleted piping from new toilet rooms.
Added new gas service and piping.

Electrical

Relocated emergency riser from closet 'C'.
Relocated fire alarm riser.
Extended power from demolished closet 'C' location.
Extended power from demolished fan room location.
Added new service transformers and switchboards.
Added standby generators and switchgear.
Added power risers and bus duct.
Added UPS systems.
Provided power to refrigeration plant on roof.

I hope that the above clarification of the 1/20/89 constructon documents allows all Port Authority personnel to achieve a better understanding of the scope content.

Should you require any further questions or comments, please call me.

Sincerely,

Evan B. Schneider
Vice President

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cc: W. Mathison
D. Sullivan
J. Beech
D. Daniels
D. Cooper
A. Tamboli
R. White/File(7-8800-02.000.8)
M. Fernandez

PKG # 10

SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

REC'D
1/23/89

SKIDMORE, OWINGS & MERRILL
JANUARY 20, 1989

SALOMON BROTHERS INC.
7 WORLD TRADE CENTER PROJECT

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
T-1		Abbreviations, etc. removed from sheet and relocated on T-2	1-20-89
T-2		New drawing showing abbreviation list, etc.	1-20-89
A-1	1	New receiving room layout. Revised base building tenant space to reflect Lease Documents. Relocated doors at wetwaste room	1-20-88
A-2	1	Revised base building tenant space at M.E.R. to reflect Lease Documents.	1-20-89
A-3	1	Revised base building tenant space to reflect Lease Documents. Deleted doors at lounge closet. Deleted lockers in locker room. Relocated door in corridor at east stair. New Door Added in east corridor.	1-20-89
A-4	1	Revised base building tenant space to reflect Lease Documents.	1-20-89
A-5	1	Revised base building tenant space to reflect Lease Documents.	1-20-89
A-29	1	New Drawing.	
A-30	1	Revised west core: mail conveyor riser dimensions, SBI shaft dimensions, location of pipe risers, M.E.R. dimensions, location of electric closet, added copy room, office support room, mail room, and pantry. Revised office support riser dimensions. Revised electric riser dimensions. Revised partition locations in bathrooms. Added shaft in east core. Remove access to electric riser in east core. New telephone closet.	1-20-89

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SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

SKIDMORE, OWINGS & MERRILL
JANUARY 20, 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
A-31	2	Revised west core: mail conveyor riser dimensions, SBI shaft dimensions, location of pipe risers, M.E.R. dimension location of electric closet, added copy room, office support room, mail room, pantry, and telephone closet. Revised office support riser dimensions. Revised electric riser dimensions. Revised electric closet and office support room dimensions. Revised partition locations in bathrooms.	1-20-89
A-32	1	Revised west core: mail conveyor riser dimensions, SBI shaft dimensions. Location of pipe risers, M.E.R. dimension, location of electric closet add copy room, office supply room, mail room, and telephone closet. Revised dimensions of office support risers Revise dimension of electrical risers Revised partitions in bathrooms New shaft in east core.	1-20-89
A-33	1	Revised west core: mail conveyor riser dimensions, SBI shaft dimensions, location of pipe risers, M.E.R. location and dimensions, added copy room, office support room, mail room, and pantry. Revised office support riser dimensions. Revised electric riser dimensions Revised electric closet and office support room dimensions. Revised partition locations in bathrooms.	1-20-89

PKG 19

SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

SKIDMORE, OWINGS & MERRILL
JANUARY 20, 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
A-34	1	Revised west core: mail conveyor riser dimensions, SBI shaft dimensions, location of pipe risers, M.E.R. location and dimensions, added copy room, office support room, mail room, pantry, and telephone closet. Revised office support riser dimensions. Revised electric riser dimensions Revised electric closet and office support room dimensions. Revised partition locations in bathrooms. New shuttle elevator. Restore layout and location of women's bathroom. Restore existing men's toilet room; revise as shown. Restore existing elevator run-by Remove pertaining notes.	1-20-89
A-35	1	Reverse the door swing on east and west electrical closets. Added two shafts at columns 74 and 75. Changed corridors at elevator core. Wall added at east elevator core. New layout for men's room. Electrical closet at west core relocated. New layout for office support risers. New layout for UPS equipment room.	1-20-89
A-36	1	Revised west core: layout for copy room, M.E. R. office support, mailroom, and electric closets. New layout for office support riser, mail conveyor riser, and electric risers. Remove M.E.R. at east core. New layout for women's room and handicapped lavatory. New shuttle elevator at central core south. 3 new locations of holes for chilled water pipes.	1-20-89

SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

SKIDMORE, OWINGS & MERRILL
JANUARY 20, 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
A-37	1	Revised west core: copy room, M.E.R., office support, mail room, and electric closet. Revised layout for office support riser, mail conveyor riser, and electric risers. New telephone closet at central core, New layout for women room and handicapped lavatory. New shuttle elevator doors and frames at central core south. 3 new locations of holes for chilled water pipes.	1-20-89
A-38	1	Revised west core: copy room, M.E.R. office support mail room, and electrical closet. Revised layout for office support riser, mail conveyor riser, and electric risers. New telephone closet at central core. New layout for men, women, and handicapped lavatory. New shuttle elevator central core south. 3 new locations of holes for chilled water pipes.	1-20-89
A-39	2	New return air and electric riser layout at east wall. Revised west core: for copy room, M.E.R., office support, mail room, and electric closet. New bathroom layout at central core. New shuttle elevator at central core south. New telephone closet at central core. Revised pipe riser, office support riser, mail conveyor riser, and electric riser at west wall. Change door swing at electric closets. Revised shaft layout at center of north wall. 3 new locations for chilled water pipes.	1-20-89
A-40	1	Change door swing at electrical closets. New layout for return air shafts at east wall. New Bathroom layouts. New shuttle elevator at central core south. Revised shaft layout at center of north wall. Revised west core: M.E.R. doors, pipe riser location and dimensions. 3 new locations of holes of chilled water pipes.	1-20-89

PG 10

SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

SKIDMORE, OWINGS & MERRILI
JANUARY 20, 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
A-41	1	Change door swing at electrical closet New bathroom layouts. Revised west core: copy room, M.E.R,. Office support, mail room, electric closet, and medical closet New telephone closet. Revised office support riser, mail conveyor riser, electric riser, and air shafts. Revised air shafts and electric riser at east wall. New shuttle elevator. 3 new locations of holes for chilled water pipes.	1-20-89
A-42	1	Change door swing at electrical closets. New bathroom layouts. Revised west core: copy room, M.E.R. Office support, mail room, and electric closet. New telephone closet. Revised office support riser, mail conveyor riser and electric riser layout. Revised air shafts and electrical riser layout at east wall. 3 new locations of holes for chilled water pipes.	1-20-89
A-43	1	New elevator shaft Revised west core: Office support, mail room, electric closet, telephone closet. M.E.R. and medical closet. Revise office support riser, mail conveyor riser and electric riser layout. Revised location and dimensions of pipe risers and air shaft. Revise bathroom layouts and dimensions. 3 new locations of holes for chilled pipes.	1-20-89
A-44	1	New M.E.R., battery room, UPS equipment room, electric closet, and telephone closet. Relocate office support riser, and mail conveyor riser. New electric riser layout. New location and dimensions of pipe risers and air shaft. 3 new locations of holes for chilled water pipes.	1-20-89

Fig 5

SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

SKIDMORE, OWINGS & MERRILL
JANUARY 20, 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
A-46	1	Revise shafts located at east wall Revise shafts located at west side of building. Revise women's room	1-20-89
A-47	1	Revise shafts located at east wall. Revise shafts located at west side of building. Revise women's room. Added M.E.R. at east side of core.	
A-48	1	Revise roofing south of M.E.R.	1-20-89
D-1	1	New layout for receiving room. Revise existing base building space to reflect tenant documents. Doors at wetwaste to remain.	1-20-89
D-3	1	Revise existing base building space to reflect tenant documents.	1-20-89
D-4	2	Revise existing base building space to reflect tenant documents.	1-20-89
D-5	2	Revise existing base building space to reflect tenant documents.	1-20-89
D-26	1	Revise existing base building space to reflect tenant documents.	1-20-89

SALOMON BROTHERS INC. SKIDMORE, OWINGS & MERRILL
DRAWING LIST OF CHANGES JANUARY 20, 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
D-37	2	Remove partitions in women's bathroom.	1-20-89
D-38	2	Revise partitions in men's bathroom.	1-20-89
D-39	3	Revise men's bathroom Add HVAC slab opening Remove slab opening on south wall Dimensions of HVAC slab opening at north wall.	1-20-89
D-41	2	Revise men's bathroom	1-20-89
D-43	2	Partitions in men's bathroom. Shuttle Shuttle elevator openings.	1-20-89
D-44	2	3 new locations of holes for chilled water pipes.	1-20-89
A-200	3	Superseded drawings plans, 1, 2, 8 elevations Added notes to drawings 5.	1-20-89
A-218	2	Details 1, 2, 3, 4, 5, 7, 9, 14, 15.	1-20-89
A-201	1	Added reference note. Added toilet elevations. 7-20	1-20-89
A-250	3	Revised stair detail.	1-20-89
A-251		No changes.	
A-255	3	Added note to detail 5, 6, 7 Added note on bottom of sheet	1-20-89
A-256	3	Added note to detail 6 Change symbol on CMU wall detail 18 & 19	1-20-89
A-262	3	Added additional insulation to metal panel system.	1-20-89
A-263	1	Add detail 9.	1-20-89

PLG 1

SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

SKIDMORE, OWINGS & MERRILL
JANUARY 20, 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
S-1	2	Corrected detail mark.	1-20-89
S-2	3	Revised floor openings.	1-20-89
S-3	2	Missing support beams were added. Connection reinforcement details and reactions were added.	1-20-89
S-4	3	Revised floor openings.	1-20-89
S-5	4	Revised beams cuts. Revised floor openings. Missing beams were added. Concrete raised floor slab was added.	1-20-89
S-6	4	Revised beams cuts. Revised floor openings. Missing beams were added. Concrete raised floor slab was added.	1-20-89
S-7	4	Revised beams cuts. Revised floor openings. Missing beams were added. Concrete raised floor slab was added.	1-20-89
S-8	4	Revised beams cuts. Revised floor openings. Missing beams were added. Concrete raised floor slab was added.	1-20-89
S-9	4	Revised beams cuts. Revised floor openings. Missing beams were added. Concrete raised floor slab was added.	1-20-89
S-10	4	Revised beams cuts. Revised floor openings. Missing beams were added. connection reinforcement details and reactions were added.	1-20-89

DLG

SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

SKIDMORE, OWINGS & MERRILL
JANUARY 20, 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
S-11	4	Revised floor openings. Revised dimensions.	1-20-89
S-12	4	Revised beam cuts. Revised floor openings. Revised dimensions.	1-20-89
S-13	5	Revised beams cuts. Revised floor openings. Revised dimensions. Connections reinforcement detail and reactions were added. Concrete raised floor slab was added.	1-20-89
S-14	5	Revised beams out. Revised floor openings. Revised dimensions.	1-20-89
S-15	4	Revised beams cuts. Revised floor openings. Revised dimensions. Connections reinforcement details and reactions were added. Concrete raised floor slab was added.	1-20-89
S-16	4	Revised beams cuts. Revised floor openings. Revised dimensions.	1-20-89
S-17	4	Revised beams cuts. Revised floor openings. Revised dimensions. Connections reinforcement details and reactions were added. Concrete raised floor slab was added.	1-20-89
S-18	4	Revised beams cuts. Revised floor openings. Revised dimensions.	1-20-89

PKG 10

SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

SKIDMORE, OWINGS & MERRILL
JANUARY 20., 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
S-19	4	Revised beam cuts. Revised floor openings. Revised dimensions. Connection reinforcement details and reactions were added. Concrete raised floor slab was added.	1-20-89
S-20	3	Revised dimensions.	1-20-89
S-21	3	Revised dimensions.	1-20-89
S-22	4	Revised floor openings. Revised dimensions.	1-20-89
S-23	2	Connection reinforcement details and reaction were added.	1-20-89
S-25	2	Revised beam cuts. Revised floor openings. Connection reinforcement details and reactions were added.	1-20-89
S-31	1	Revised detail.	1-20-89
S-33	1	Revised detail.	1-20-89
S-34	1	Revised details.	1-20-89
S-35	1	Revised details.	1-20-89

SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

SKIDMORE, OWINGS & MERRILL
JANUARY 20, 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
HVAC-1		No changes	12-19-88
HVAC-1A		New drawing	1-20-89
HVAC-2		No changes	12-19-88
HVAC-3		No changes	12-19-88
HVAC-4	1	6" HWS main loop routed on this floor	1-20-89
HVAC-5	1	6" HWS main loop routed down to 4th floor Revised detail of fan plenums (9'-4" X 9'-4" openings)	1-20-89
HVAC-6	1	6" HWS loop is no longer on this floor Revised plenum openings (5'-4" X 9'-4")	1-20-89
HVAC-26	1	No Changes	12-19-88
HVAC-31		New Drawings	1-20-89
HVAC-33		New Drawings	1-20-89
HVAC-34	1	CHWS&R risers out of west shaft West O.A. shaft deleted and louvers added. CHW S&R risers located in west M.E.R. Modified smoke exhaust ductwork in existing fan room O. A. transfer in fan room shown T.X. transfer at 34th floor.	1-20-89
HVAC-35	3	Section of BB riser offsets shown CHW risers in west shaft removed CHW risers (redundant) in elevator shaft removed. O.A shaft in west M.E.R. deleted Louvers at window instead. CHW risers located in west M.E.R. 1" control piping shown.	1-20-89

SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

SKIDMORE, OWINGS & MERRILL
JANUARY 20, 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
HVAC-37	3	Modified smoke exhaust ductowrk in existing piping modification for E.D. and elevator M.E.R. AC-unit shown CHW risers in west shaft removed CHW risers (redundant) in elevator shaft removed. O.A. shaft at west M.E.R, deleted Louvers at window instead. CHW riser located in west M.E.R.	1-20-89
HVAC-38	3	West M.E.R. revised - no O.A. shaft CHW risers located in west M.E.R. Louvers for O.A. Revised shafts into trading floor. CHW&R risers in west shaft removed Water risers (redundant) in elevator shaft removed. CHW&R risers for trading floor M.E.R. shown	1-20-89
HVAC-39	3	West M.E.R. revised - no O.A. shaft CHW risers located in west M.E.R. Louvers for O.A. Revised shafts into trading floor. CHW&R risers in west shaft removed Water risers (redundant) in elevator shaft removed. CHW&R risers for trading floor M.E.R. shown	1-20-89
HVAC-42	3	West M.E.R. revised - no O.A. shaft CHW risers located in west M.E.R. Louvers for O.A. Revised shafts into trading floor. CHW&R risers in west shaft removed Water risers (redundant) in elevator shaft removed. CHW&R risers for trading floor M.E.R. shown	1-20-89

SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

SKIDMORE, OWINGS & MERRILL
JANUARY 20, 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
HVAC-43	3	West M.E.R. revised - no O.A. shaft CHW risers located in west M.E.R. Louvers for O.A. Revised shafts into trading floor. CHW&R risers in west shaft removed Water risers (redundant) in elevator shaft removed. CHW&R risers for trading floor M.E.R. shown KX for short stop grille. Shown in new location in new shaft.	1-20-89
HVAC-44	3	New west M.E.R. - remove O.A. shaft louvers instead. Located CHW risers in new M.E.R. Remove CHW riser from west shaft and elevator shaft. Provide new location for 41st for kitchen exhaust duct.	1-20-89
HVAC-46	3	CHW riser out of west shaft. Piping in cooling tower well revised. Smoke exhaust ductwork in existing M.E.R. revised. CHW redundant risers removed, Shafts (S&R) for 45th removed. West riser locationsd revised.	1-20-89
HVAC-47	3	West risers and calling tower well piping revised. Shaft (S&R) for 45th floor revised. New M.E.R. for 47th floor added	1-20-89
HVAC-48	1	Completed piping	1-20-89
HVAC-49		New drawings.	1-20-89
HVAC-50		New drawings	1-20-89

PKC 19

SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

SKIDMORE, OWINGS & MERRILL
JANUARY 20, 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
HVAC-51		New drawings	1-20-89
HVAC-52		New drawings	1-20-89
HVAC-53		New drawings	1-20-89
HVAC-54		New drawings	1-20-89
HVAC-55		New drawings	1-20-89

SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

SKIDMORE, OWINGS & MERRILL
JANUARY 20, 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
P-1	1	Revised domestic CW service and water meter layout. Deleted F.D.'s and note at M.E.R.	1-20-89
P-2	1	Deleted piping from toilet at 3rd floor as specified.	1-20-89
P-3	1	Deleted piping for toilet	1-20-89
P-4	1	Placed piping for toilet on hold. Added waste. Piping for plenum drain at 5th floor.	1-20-89
P-5	1	Placed part sanitary risers diagram on hold.	1-20-89
P-26	3	Added gas piping	1-20-89
P-32	1	Deleted F.D.'s and related piping at M.E.R. Added gas piping	1-20-89
P-33	1	Deleted F.D.'s and related piping at M.E.R. & soil piping from new 34th floor toilet added gas piping.	1-20-89
P-34	1	Deleted F.D.'s and related piping at M.E.R. piping from new men's toilet and part sanitary riser diagrams. Added gas piping	1-20-89
P-35	1	Deleted F.D.'s and related piping at M.E.R. and part riser diagrams and note. Added gas piping.	1-20-89
P-36	1	Deleted F.D.'s and are related piping at M.E.R.'s notes and specifications. Added gas piping.	1-20-8[illegible]
P-37	1	Deleted F.D.'s and related piping from M.E.R.'s and piping from new toilet fixture at 33rd floor. floor. Added gas piping.	1-20-89

PLG 5

SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

SKIDMORE, OWINGS & MERRILL
JANUARY 20, 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
P-38	1	Deleted F.D.'s and related piping at M.E.R. placed new toilet rooms on hold. Added gas piping.	1-20-89
P-39	1	Deleted F.D.'s and related piping at M.E.R., and piping from new toilet room. Added gas piping.	1-20-89
P-41	1	Deleted F.D.'s and related piping at M.E.R. and piping from toilet room. Added gas piping.	1-20-89
P-44	1	Deleted F'D.'s and related piping at M.E.R. added gas piping.	1-20-89
P-45	2	Deleted piping from toilet rooms. Relocate storm line piping. Added gas piping.	1-20-89
P-46	2	Added booster pumps, water heater and back flow preventer for cooling tower water make-up supply. Deleted piping from 47th floor M.E.R. placed toilet room piping on hold.	1-20-89
P-47	2	Deleted F.D.'s and related piping at M.E.R. placed piping for toilets and part riser diagrams on hold.	1-20-89
P-48	1	Added CW cooling tower make-up, black flow preventer for CW supply to HVAC equipment and hose bibb for M.E.R.	1-20-89
P-49		New drawing.	1-20-89

PKG 10

SALOMON BROTHERS INC.
DRAWING LIST OF CHANGES

SKIDMORE, OWINGS & MERRILL
JANUARY 20, 1989

DRAWING NUMBER	REVISION NUMBER	DESCRIPTION	REVISION DATE
E-S1		New Drawing.	1-20-89
E-R1	5	Revised switchboards. Changed busduct riser size. Changed 400 disc. switch to 600A	1-20-89 1-20-89
E-R2	2	No change	
E-5	2	Added unit heaters Added note #3 Added location of east electrical riser	1-20-89
D-1E	1	Note work not in this contract	1-20-89
E-29	1	Revised entire drawing.	1-20-89
E-34	1	Revised entire drawing.	1-20-89
E-35	1	Revised entire drawing.	1-20-89
E-36	1	Revised entire drawing.	1-20-89
E-38	1	Revised entire drawing.	1-20-89
E-39	1	Revised entire drawing.	1-20-89
E-40	1	Revised entire drawing.	1-20-89
E-44	1	Revised entire drawing.	1-20-89
E-46	1	Revised entire drawing.	1-20-89
E-47	1	Revised entire drawing.	1-20-89
E-48	1	Revised entire drawing.	1-20-89

THE PORT AUTHORITY OF NEW YORK & NEW JERSEY

M E M O R A N D U M

To: Mr. R. Linn, Deputy Director for Physical Facilities, WT&ED
From: Arthur P. Coras
Date: February 13, 1989
Subject: WTC - ALTERATION APPLICATION #W-7004 - SALOMON BROTHERS - 7 WTC - BASE BUILDING MODIFICATIONS

Reference: Tenant Alteration Review Requests, dated 12/23/88, 1/5/89, and 2/9/89

Copy To: L. Sanchez A. Vaccaro Job Folder
Chrono Folder

A review of the material submitted with the referenced request for the subject application has been made.

It is recommended that approval to proceed be withheld pending submission of the items indicated below being revised in accordance with the twenty-seven (27) requirements listed on the attached rider.

Arthur P. Coras, P.E.
Manager
Quality Assurance Division

JPV/dm
att.

Port Authority of New York an ew Jersey
ne World Trade Center, New York, NY 10048

2/9

WORLD TRADE & ECONOMIC DEVELOPMENT DEPARTMENT

Date 2/9/89

TO: Quality Assurance Div.
1 WTC - 51 NE

Subject: SALOMON BROS.
W 7004

ATTENTION: PAUL COOPER

GENTLEMENT:
We are transmitting herewith:

| | Drawings as listed below (Reproducibles) (Prints) (Tracings) (Photostats)

| | _____

| | For your comment _____

This material is sent:

| | At your request

|X| For your information or use

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	1 -	LETTER: E. SCHNEIDER/		
		L. SANCHEZ		dated 2/3/89
		- STRUCTURAL RESPONSES		
		from I. CANTOR re: TCRU		
	4	COMMENTS transmitted		
		on 1/19/89		

Remarks:

The attached material was holding up submission #6 and was submitted at a later date

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
FEB 09 1989 (6)
W-7004
ALTERATION APPLICATION

By E. McAleney
WTC PLANNING DIVISION
SUITE ~~62 EAST~~ 745

|| L. SANCHEZ
||
||
||
||

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New York, N Y 10004 (212) 747-7000

Salomon Brothers Inc

February 3, 1989

Mr. Luciano Sanchez
World Trade Center Planning
Port Authority of New York and New Jersey
1 World Trade Center/Room 735
62nd Floor East
New York, NY 10048

Re: Final Response to TCA-7004 (Previously Approved)

Dear Luciano:

Attached for your review are the structural comment responses that you requested relating to our "Demolition Only" application.

In reviewing Akbar Tamboli's responses, I discovered that the item relating to a specification of ceiling anchor type has been omitted. As we are presently researching ceiling systems, we would appreciate the opportunity to postpone our specification in relation to TCA-7004. We will continue to pursue the ceiling anchor comment resolution and submit for your approval at the earliest possible date.

Should you have any further questions regarding the above, please call.

Sincerely,

Evan B. Schneider
Vice President

cc: W. Mathison
A. Tamboli
R. White/File (7-8800-02.000.8)
M. Fernandez

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
FEB 09 1989
W-7004
ALTERATION APPLICATION

Ref. No. 6234-0017

January 30, 1989

RECEIVED
FACILITIES MGMT
FEB 02 1989

Mr. Manuel Fernandez
Salomon Brothers, Inc.
2 New York Plaza
34th Floor
New York, New York 10004

PROJECT: SBI - 7 World Trade Center
SUBJECT: Port Authority Drawing Comments

Dear Manuel:

Enclosed is the office of Irwin Cantor's responses to the Port Authority's "Preliminary P.A. Engineering Department Structural Review Comments" dated 1/19/89.

The last comment has to do with the ceiling system used by Silverstein in the building. Please have Silverstein submit substantiation of this system for Port Authority approval.

Very truly yours,

SKIDMORE, OWINGS & MERRILL

Warren J. Mathison
Associate Partner

cc: E. Schnider
CF-624-200

Skidmore, Owings & Merrill
220 East 42nd Street, New York, New York 10017
212 309-9500, Telex 620590

Member: The C r/Seinuk Group

THE OFFICE OF IRWIN G. CANTOR, P.C. / CONSULTING ENGINEERS
219 EAST 42ND STREET • NEW YORK, NEW YORK 10017 • TELEPHONE: (212) 949-9150
IRWIN G. CANTOR, P.E., F.A.C.I. YSRAEL A. SEINUK, P.E., F.A.C.I.

TELECOPY TRANSMITTAL

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DATE: 1.23.89

TO: Dan Sullivan

FROM: AKBAR

SPECIAL INSTRUCTIONS: Please confirm receipt.

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(212) 949-9150 Ext. 201 MAIN NUMBER
(212) 697-5867 FAX NUMBER

SILVIAN MARCOUS, P.E. executive vice president • ETAO BALCEDO, P.E. senior vice president

The Port Authority of New York and N Jersey
One World Trade Center, New York, N 10048

WORLD TRADE DEPARTMENT

Date 1/19/

TO: OFFICE OF IRWIN CANTOR
220 EAST 42 ND ST.
NEW YORK, N.Y.

Subject SALOMON BROS
W 7004
7 WTC.

ATTENTION: MR. AKBAR TAMBOLI

RECEIVED
JAN 20 1989
IRWIN G. CANTOR
ENGINEERING ENGINEERS

GENTLEMEN:
We are transmitting herewith:

☐ Drawings as listed below (Reproducibles) (Prints) (Tracings) (Photostats)

☐ _____

☐ For your comment _____

This material is sent:

☐ At your request

☑ For your information or use

DRAWING NUMBER	NUMBER OF COPIES	ORIGINAL DATE	REVISION DATE	DESCRIPTION
"PRELIMINARY" - P.A ENGINEERING DEPT				
STRUCTURAL REVIEW COMMENTS				
NOTE: "DEMOLITION ONLY" APPLICATION IS				
PRESENTLY BEING APPROVED.				

Remarks: NO FURTHER APPLICATIONS WILL BE APPROVED UNTIL THESE COMMENTS ARE RESOLVED.

By L. Sanchez
The World Trade Center Planning Division – Suite 74

☐ E. McNierney
☐
☐
☐
☐

EMcN for

FAX

☐ HAND DELIVERY ☑ MESSENGER ☐ 1ST CLASS ☐ AIRMAIL ☐ PARCEL POST ☐ AIR EXPRESS ☐ SPECIAL DELIVERY

JAN 22 '89 09:42 P.A. ECONOMIC DEVELOPMENT DEPT. P.1

SENT BY: ; 1-23-89 11:27AM ; 2129499150→ 2129499150;# 1 4035;# 2

W-7004 PRELIMINARY

STRUCTURAL

* . Submit calculations, prepared by hand, to show that the final stress in the reinforced columns does not exceed the yield stress. Include the double-length interior columns in this investigation.

* . Submit calculations for the weld between column and plate.

* . Submit details of the method of transferring loads in reinforced columns at levels where beams frame into column web.

. The report on ceiling anchor tests describes only one test on a Ladd clip. This is not enough to recommend approval. Please revise the ceiling support details. (Repeat comment)

From Rick dated 12/20/88:

RECEIVED
JAN 20 1989
IRWIN G. CANTOR
CONSULTING ENGINEERS

* The investigation of the double-length columns shall consider the effects of the change in cross-section at mid-height, and the strength of the splice. Submit calculations. (Repeat comment)

JAN 20 '89 09:42 P.A. ECONOMIC DEVELOPMENT DEPT. P.2

SALOMON BROTHERS INC.

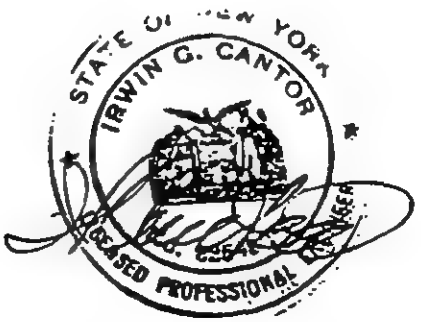
BASE BUILDING MODIFICATIONS

7 WORLD TRADE CENTER

STRUCTURAL COMPUTATIONS

PORT AUTHORITY COMMENT RESPONSE

(~~1-30-~~89)



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JOB - INT -

SHEET NO 3 OF 15

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MEMO

TO: File

FROM: Akbar Tamboli AT

DATE: January 27, 1989

Re: 7 World Trade Center Base Building Modification for Salomon Brothers Inc.,
Structural Review Comments received by OIGC on January 20, 1989
IGC Job No. 88057-200

The following is the response to the Port Authority Construction review comments received on January 20, 1989 (copy enclosed). The response is arranged in the same sequence as the review comments.

1. Calculations for reinforced columns prepared by hand are enclosed herewith.

   These computations show double length interior columns donot exceed allowable stresses.

2. Welds between column and plate are based on American Institute of Steel Construction Manual. The back-up information is enclosed herewith.

3. Details and calculations for the method used to transfer loads in reinforced columns where beams frame into column web are enclosed herewith.

4. The response to ceiling support detail is being submitted under separate cover.

AT:mm

TWC 88057-200

W-7004

PRELIMINARY

STRUCTURAL

* 1. Submit calculations, prepared by hand, to show that the final stress in the reinforced columns does not exceed the yield stress. Include the double-length interior columns in this investigation.

* 2. Submit calculations for the weld between column and plate.

* 3. Submit details of the method of transferring loads in reinforced columns at levels where beams frame into column web.

4. The report on ceiling anchor tests describes only one test on a Ladd clip. This is not enough to recommend approval. Please revise the ceiling support details. (Repeat comment)

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From Rider dated 12/20/88:

* • The investigation of the double-length columns shall consider the effects of the change in cross-section at mid-height, and the strength of the splice. Submit calculations (Repeat comment)

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SHEET NO. 1 OF 5 88057-20[illegible]
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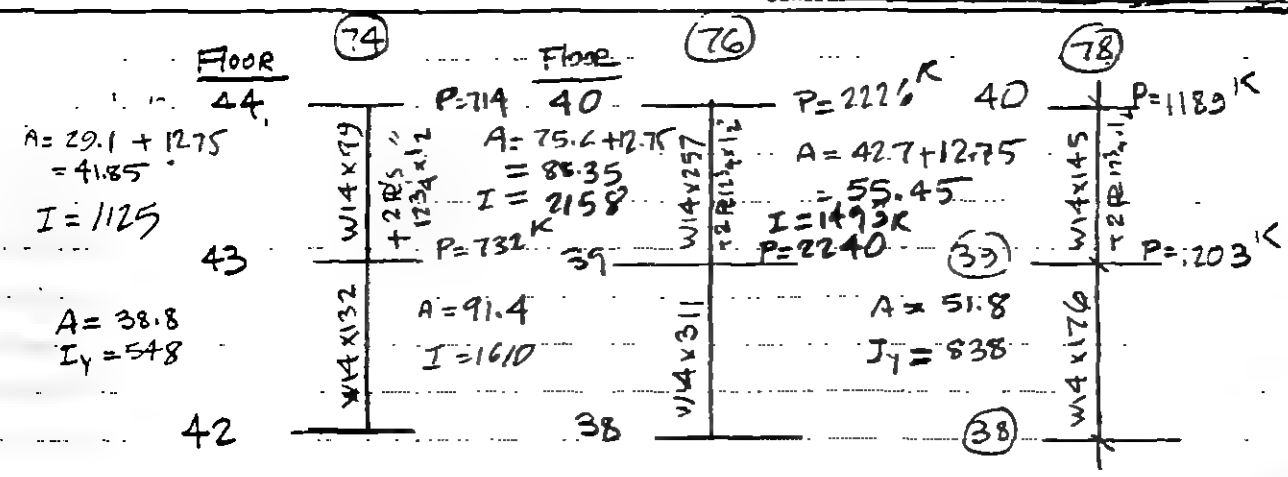
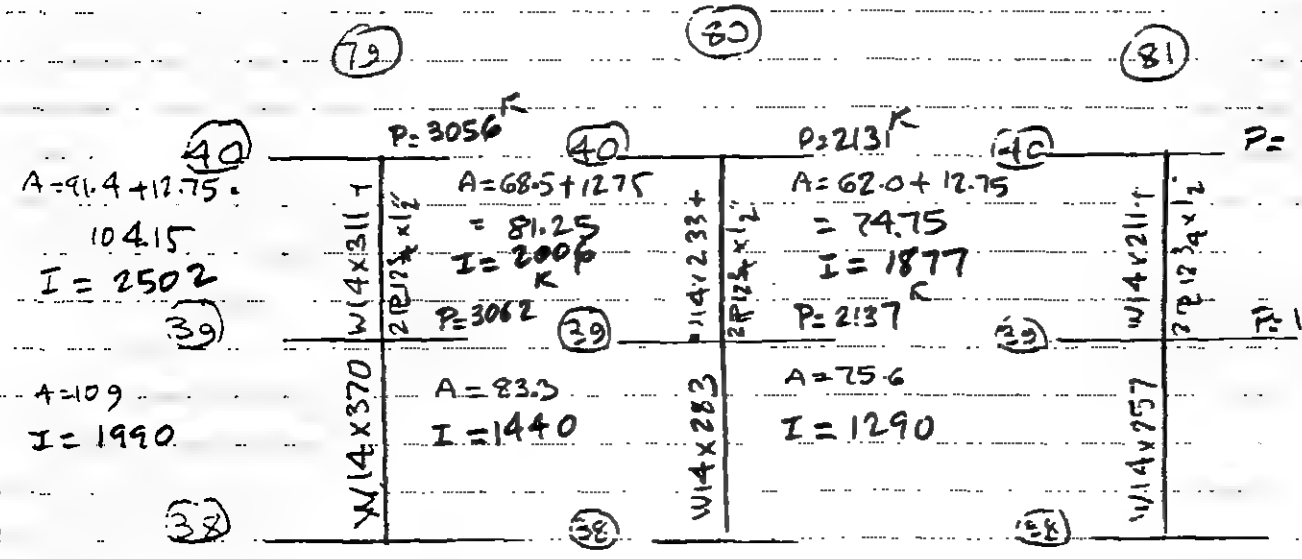
SCALE PA COMMENT #1 Col Reinforcement





FOR W14x99 $I_y = (14.565/2 + .5/2)^2 \times 12.75 + 402 = 723 + 402 = 1125$

FOR W14x257 $I_y = \left(\frac{16+.5}{2}\right)^2 \times 12.75 + 1290 = 868 + 1290 = 2158$

FOR W14x145 $I_y = \left(\frac{15.5+.5}{2}\right)^2 \times 12.75 + 677 = 816 + 677 = 1493$

FOR W14x311 $I_y = \left(\frac{16.23+.5}{2}\right)^2 \times 12.75 + 1610 = 892 + 1610 = 2502$

FOR W14x233 $I_y = \left(\frac{15.89+.5}{2}\right)^2 \times 12.75 + 1150 = 856 + 1150 = 2006$

FOR W14x211 $I_y = \left(\frac{15.8+.5}{2}\right)^2 12.75 + 1030 = 847 + 1030 = 1877$

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JOB 7 IC 8857-200
SHEET NO 2 OF 5
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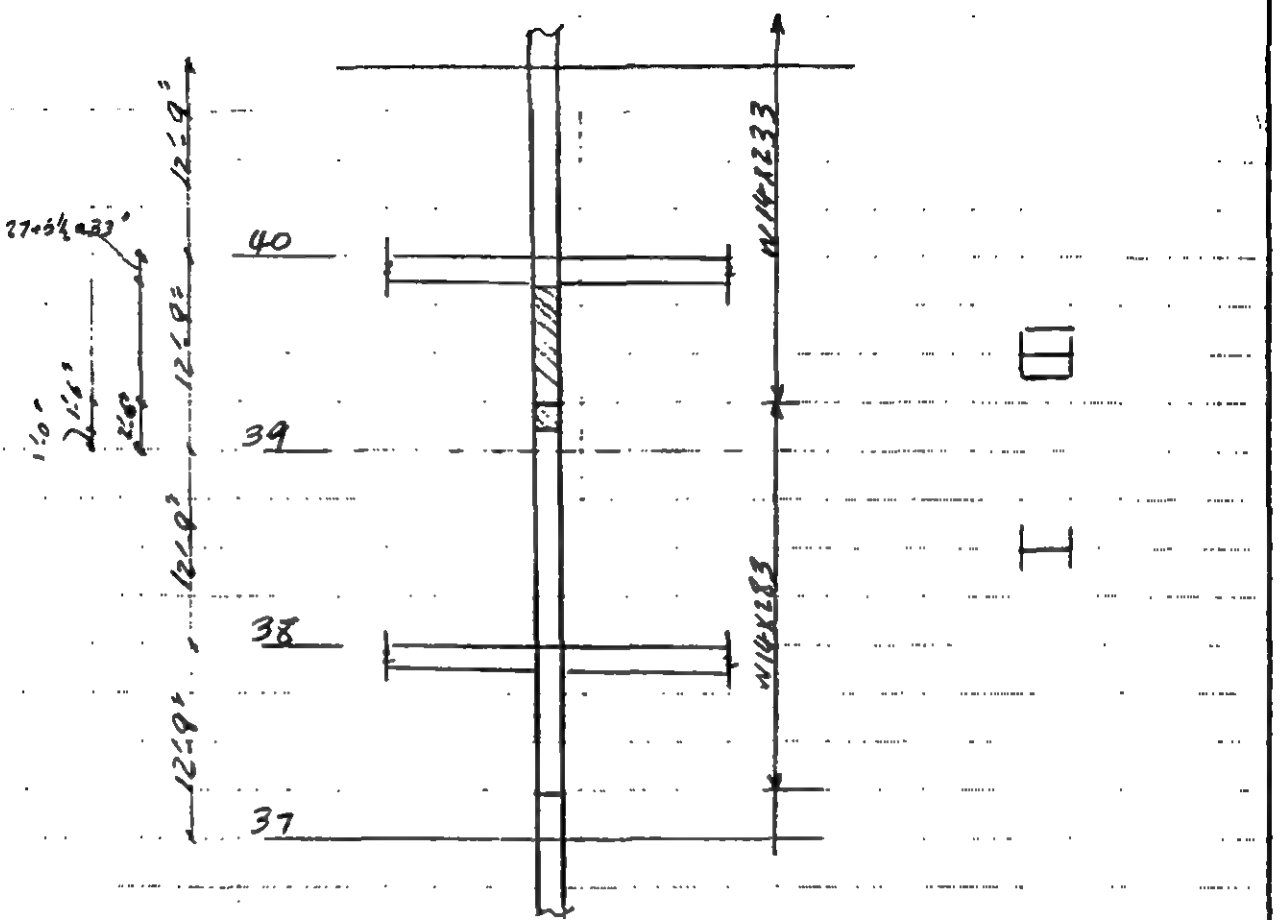
FOR Col. #80

Col. DESIGN



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JOB TWTC 88057-200
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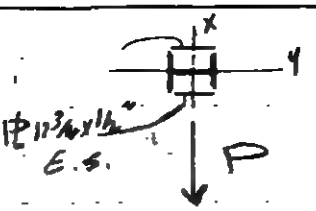
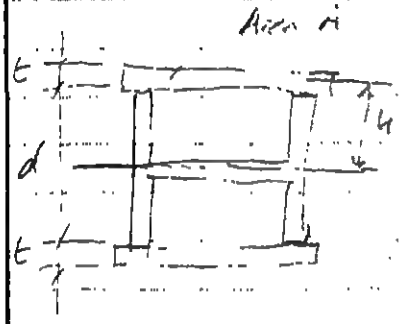


$I_x = 3d_0 + \frac{12.75^3}{12} \times \frac{1}{4} \times 2$
$= 3183$
$I_y = 1150 + \left(\frac{16.89+.5}{2}\right)^2 \times 12.75 \times .5$
$= 2006$

Area A

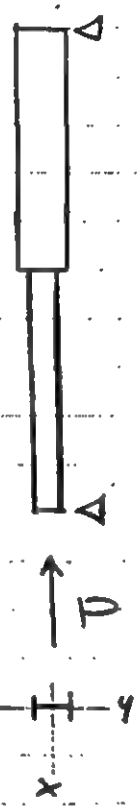


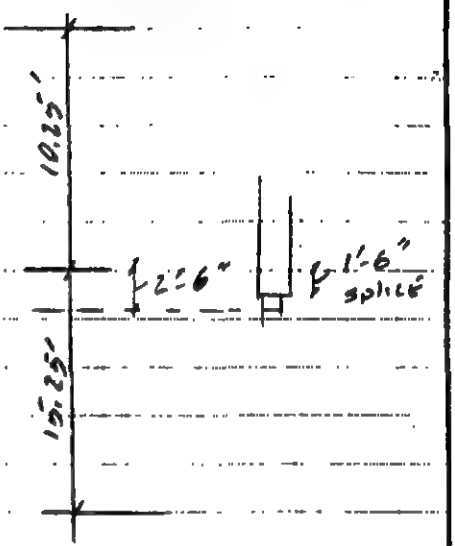
$A_2 = 81.2$
$r_{x_2} = 6.26$ $I_{x_2} = 3183$
$r_{y_2} = 4.97$ $I_{y_2} = 2006$

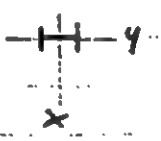
$A_1 = 83.3$
$r_{x_1} = 6.79$ $I_{x_1} = 3840$
$r_{y_1} = 4.17$ $I_{y_1} = 1440$

$I = I_{beam} + 2Ah^2$

$h = \frac{d+t}{2}$







- EFFECTIVE EULER BUCKLING LOAD OF SYSTEM ABOVE ABOUT THE WEAK AXIS:

THE BUCKLING LOAD FOR COLUMN WITH VARIABLE PROPERTIES IS CALCULATED BY N. M. NEWMARK METHOD.

REF: 1- NEWMARK, N.M., "NUMERICAL PROCEDURE FOR COMPUTING DEFLECTION, MOMENTS, AND BUCKLING LOADS," TANS. ASCE, 108 PP. 1161-1234, 1943.

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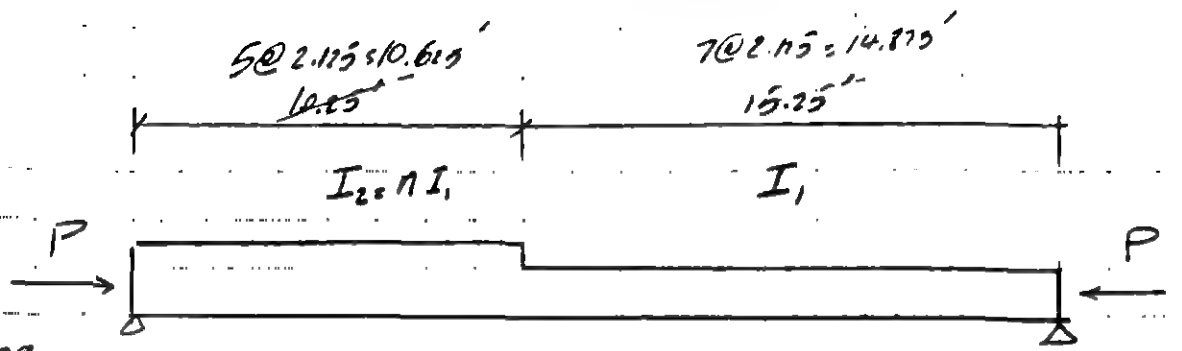
$L = 12h$



$n = 1.39$

$\theta = 15°$

Multiplier

y_0 =	0	.25	.5	.7	.87	.96	1	.96	.87	.7	.5	.25	0	(ft)
$\alpha = \frac{Py}{EI}$ =	0	.18	.36	.5	.62	.69	.96	1	.96	.87	.7	.5	.25	0	$\frac{P}{EI_0}$
$\bar{\alpha}$ =	.03	.18	.357	.498	.616	.325	.49	.993	.955	.863	.697	.495	.25	.042	$\frac{P}{EI_0} \cdot h$
ϕ_1 =	-2	-1.97	-1.79	-1.433	-.935	-.319	.506	1.499	2.454	3.317	4.09	4.51	4.36	4.89	$\frac{P}{EI_0} h$
y_1 =	0	-1.97	-3.76	-5.19	-6.13	-6.45	-5.94	-4.44	-1.99	1.33	5.34	9.85	14.61		$\frac{Ph^2}{EI_0}$
Correct $\phi_1 = \left(\frac{14.61}{12}\right) = 1.218$	-3.22	-3.19	-3.01	-2.65	-2.16	-1.54	-.71	.279	1.234	2.1	2.79	3.29	3.54	3.58	$\frac{Ph}{EI_0}$
Correct y_1 =	0	-3.19	-6.2	-8.85	-11.01	12.55	13.26	12.98	11.74	9.65	6.85	3.56	0		$\frac{Ph^2}{EI_0}$
y_1/y_0 =		12.76	12.4	12.64	12.65	13.07	13.26	13.52	13.5	13.78	13.7	14.24	0		$\frac{Ph^2}{EI_0}$

$\overline{\left(\frac{y_1}{y_0}\right)} = 13.22$

$$13.22 \frac{Ph^2}{EI_0} = 1$$

$$P_{cr} = \frac{EI_0}{13.22\left(\frac{L}{12}\right)^2} = \frac{10.9\,EI_0}{L^2}$$

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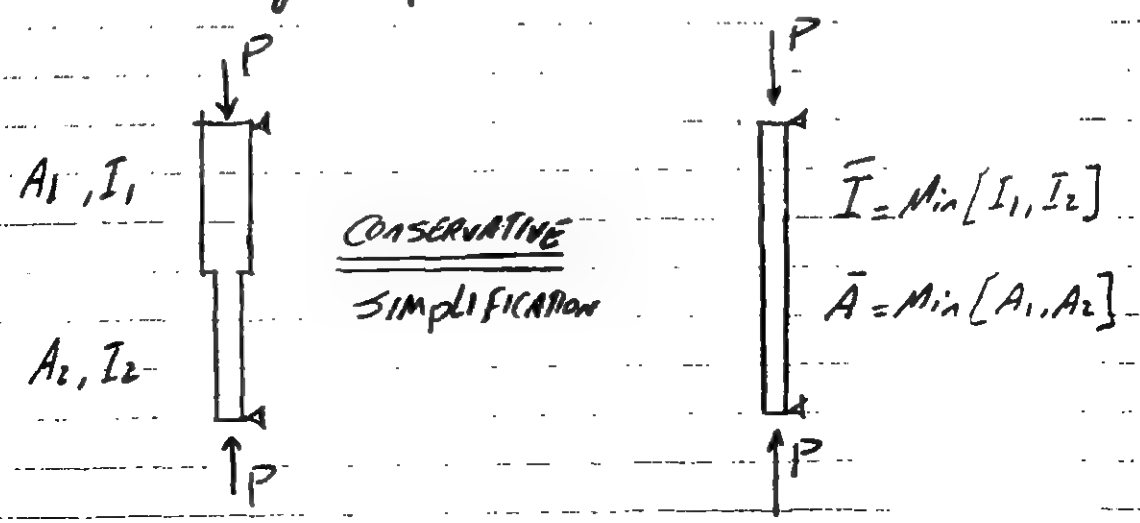
I_{eq} :

$$P_{cr} = \frac{\pi^2 E I_{eq}}{\ell^2} = \frac{10.9 E I_o}{\ell^2}$$

$$I_{eq} = \frac{10.9 I_o}{\pi^2} \approx 1.10 I_o = 1.1 \times 1440 = 1584$$

A_{eq} = USE Min $[A_1 \& A_2]$ = $A_2 = 81.2 in^2$

THEREFORE, IN DESIGN OF COLUMNS, WITH VARIABLE MOMENT OF INERTIA, Conservatively I_{min} (minimum of I_1 & I_2) may be used instead of I_{eq}.



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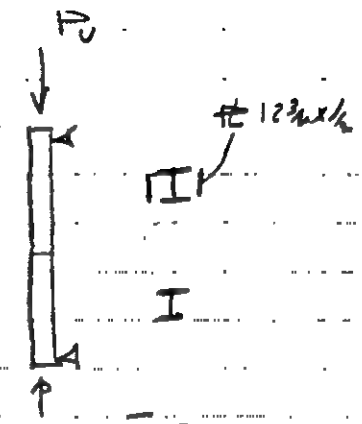
DESIGN PROCEDUR USING LRFD-AISC.

P_u k



$\bar{I} = I_{min} = 1440$

$\bar{A} = A_{min} = 81.3$

12¾ x ½ $\Rightarrow b/t = \frac{12.75}{.5} = 25.5 < \frac{238}{\sqrt{36}} = 39.6$ ✓

$\therefore P_u \leq \phi_c P_n$

$\phi_c = .85$

$P_n = A_g F_{cr}$

$A_g = \bar{A} = 81.3 \text{ in}^2$

$\lambda_c = \frac{KL}{r\pi}\sqrt{\frac{F_y}{E}}$

$K = 1$ col. is BRACED BY WIND SYSTEM IN BOTH DIRECTION

$L = 25.5'$

$r = \sqrt{\frac{\bar{I}}{\bar{A}}} = \sqrt{\frac{1440}{81.3}} = 4.2 \text{ in}$

$\lambda_c = \frac{1 \times 25.5 \times 12}{4.2 \times \pi}\sqrt{\frac{50}{29000}} = .96 < 1.5$

$\therefore F_{cr} = \left(0.658^{\lambda_c^2}\right) F_y$

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$$F_{cr} = (.658^{.96^2})\,50 = 33.9 \text{ ksi}$$

$$\phi P_n = 0.85 \times 81.3 \times 33.9 = 2343. \text{ k}$$

$$\therefore P_u = 2137 < \phi P_n = 2343 \text{ k}$$

O.K.

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check col NO. 74
From Page 1A

$\begin{cases} A_{min} = 38.8 \\ I_{min} = 548 \end{cases}$ $r = \sqrt{\frac{548}{38.8}} = \sqrt{14.12} = 3.75$

$\lambda_c = \frac{KL}{r\pi}\sqrt{\frac{F_y}{E}} = \frac{25.5 \times 12}{3.75 \times \pi}\sqrt{\frac{50}{29000}} = 1.07 < 1.5$

$F_{cr} = (.658^{(1.07)^2})50 = 30.96$

$\phi P_n = .85 \times 38.8 \times 30.96 = 1021^K > 732^K$ O.K

CHECK COL NO. 76

$\begin{cases} A_{min} = 88.35 \\ I_{min} = 1610 \end{cases}$ $r_{min} = \sqrt{\frac{1610}{88.35}} = 4.27$

$\lambda_c = \frac{25.5 \times 12}{4.27 \times \pi} \times .0415 = .95 < 1.5$

$F_{cr} = (.658^{(.95)^2})50 = 34.27$

$\phi P_n = .85 \times 88.35 \times 34.27 = 2574 > 2240$ O.K.

CHECK COL NO. 78

$\begin{cases} A_{min} = 51.8 \\ I_{min} = 838 \end{cases} \Rightarrow r_{min} = \sqrt{\frac{838}{51.8}} = 4.02$

$\lambda_c = \frac{25.5 \times 12}{4.02 \times \pi} \times .0415 = 1.005 < 1$

$F_{cr} = (.658^{(1.005)})50 = 32.76$

$\phi P_n = .85 \times 548 \times 32.76 = 1442 > 1203$ O.K.

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CHECK COL NO. 79

$$\begin{cases} A_{min} = 104.15 \\ I_{min} = 1990 \end{cases} \Rightarrow r_{min} = \sqrt{\frac{1990}{104.15}} = 4.37$$

$$\lambda_c = \frac{25.5 \times 12}{4.37 \times \pi} \times .0415 = .93$$

$$F_{cr} = \left(.658^{(.93)^2}\right) 50 = 34.81$$

$$\phi P_n = .85 \times 104.15 \times 34.81 = 3081^K > 3062 \quad \text{O.K.}$$

CHECK COL. NO 81

$$\begin{cases} A_{min} = 74.75 \\ I_{min} = 1290 \end{cases} \Rightarrow r_{min} = \sqrt{\frac{1290}{74.75}} = 4.15$$

$$\lambda_c = \frac{25.5 \times 12}{4.15 \times \pi} \times .0415 = .974$$

$$F_{cr} = \left(.658^{(.974)^2}\right) 50 = 33.61$$

$$\phi P_n = .85 \times 33.61 \times 74.75 = 2135 > 1582$$

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E4. BUILT ...EMBERS

At the ends of built-up compression members bearing on base plates or milled surfaces, all components in contact with one another shall be connected by a weld having a length not less than the maximum width of the member or by bolts spaced longitudinally not more than four diameters apart for a distance equal to 1½ times the maximum width of the member.

Along the length of built-up compression members between the end connections required above, longitudinal spacing for intermittent welds, bolts or rivets shall be adequate to provide for the transfer of calculated stress. However, where a component of a built-up compression member consists of an outside plate, except as provided in the next sentence, the maximum spacing shall not exceed the thickness of the thinner outside plate times $127/\sqrt{F_y}$, nor 12 in., when intermittent welds are provided along the edges of the components or when fasteners are provided on all gage lines at each section. When fasteners are staggered, the maximum spacing on each gage line shall not exceed the thickness of the thinner outside plate times $190/\sqrt{F_y}$, nor 18 in.

For unpainted built-up members made of weathering steel which will be exposed to atmospheric corrosion, the fasteners connecting a plate and a shape or two-plate components in contact with one another shall not exceed 14 times the thickness of the thinnest part nor 7 in. and the maximum edge distance shall not exceed eight times the thickness of the thinnest part, nor 5 in.[91]

Compression members composed of two or more shapes shall be connected to one another at intervals such that the slenderness ratio L/r of either shape, between the fasteners, does not exceed the governing slenderness ratio of the built-up member. The least radius of gyration r shall be used in computing the slenderness ratio of each component part.

The design strength of built-up members composed of two or more shapes shall be determined in accordance with Section E2 or Appendix E3 subject to the following modification. If the buckling mode involves relative deformation that produce shear forces in the connectors between individual shapes, Kl/r is replaced by $(Kl/r)_m$ determined as follows:

a. for snug-tight bolted connectors:

$$\left(\frac{Kl}{r}\right)_m = \sqrt{\left(\frac{Kl}{r}\right)_o^2 + \left(\frac{a}{r_i}\right)^2} \qquad \text{(E4-1)}$$

b. for welded connectors and for fully tightened bolted connectors as required for slip-critical joints:

with $\frac{a}{r_i} > 50$

$$\left(\frac{Kl}{r}\right)_m = \sqrt{\left(\frac{Kl}{r}\right)_o^2 + \left(\frac{a}{r_i} - 50\right)^2} \qquad \text{(E4-2)}$$

with $\frac{a}{r_i} \leq 50$

$$\left(\frac{Kl}{r}\right)_m = \left(\frac{Kl}{r}\right)_o \qquad \text{(E4-3)}$$

where

$\left(\frac{Kl}{r}\right)_o$ = column slenderness of built-up member acting as a unit

$\frac{a}{r_i}$ = largest column slenderness of individual components

$\left(\frac{Kl}{r}\right)_m$ = modified column slenderness of built-up member

a = distance between connectors

r_i = minimum radius of gyration of individual component

Open sides of compression members built up from plates or shapes shall be provided with continuous cover plates perforated with a succession of access holes. The unsupported width of such plates at access holes, as defined in Sect. B5.1, is assumed to contribute to the design strength provided that:

a. The width-thickness ratio conforms to the limitations of Sect. B5.1.
b. The ratio of length (in direction of stress) to width of hole shall not exceed two.
c. The clear distance between holes in the direction of stress shall be not less than the transverse distance between nearest lines of connecting fasteners or welds.
d. The periphery of the holes at all points shall have a minimum radius of 1½ in.

The function of perforated cover plates may be performed by lacing with tie plates at each end and at intermediate points if the lacing is interrupted. Tie plates shall be as near the ends as practicable. In main members providing design strength, the end tie plates shall have a length of not less than the distance between the lines of fasteners or welds connecting them to the components of the member. Intermediate tie plates shall have a length not less than ½ of this distance. The thickness of tie plates shall be not less than 1/50 of the distance between lines of welds or fasteners connecting them to the segments of the members. In welded construction, the welding on each line connecting a tie plate shall aggregate not less than ⅓ the length of the plate. In bolted and riveted construction, the spacing in the direction of stress in tie plates shall be not more than six diameters and the tie plates shall be connected to each segment by at least three fasteners.

Lacing, including flat bars, angles, channels or other shapes employed as lacing, shall be so spaced that the L/r ratio of the flange included between their connections shall not exceed the governing slenderness ratio for the member as a whole. Lacing shall be proportioned to provide a shearing strength normal to the axis of the member equal to 2% of the compressive design strength of the member. The L/r ratio for lacing bars arranged in single systems shall not exceed 140. For double lacing this ratio shall not exceed 200. Double lacing bars shall be joined at their intersections. For lacing bars in compression, L may be taken as the unsupported length of the lacing bar between welds or fasteners connecting it to the components of the built-up member for single lacing, and 70% of that distance for double lacing. The inclination of lacing bars to the axis of the member shall preferably be not less than 60° for single lacing and 45° for double lacing. When the distance between the lines of welds or fasteners in the flanges is more than 15 in., the lacing shall preferably be double or be made of angles.

E5. PIN-CONNECTED COMPRESSION MEMBERS

Pin-connections of pin-connected compression members shall conform to the requirements of Sect. D3 except Formulas D3-1 and D3-2 do not apply.

PA Comment #2 - Weld Between Cols & PDS

SHT. 10/15

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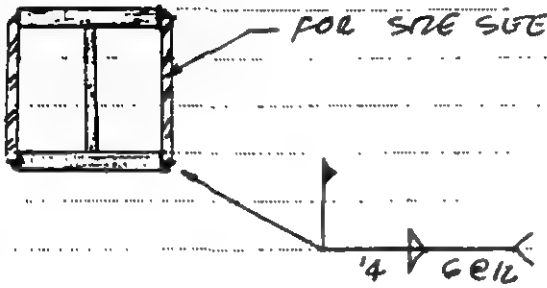
SCALE PA Comment #2 (STRUCTURAL)

Weld Between Cols & PLS.

TYP. COL REINFORCEMENT WELDS

DWG S-31 TYPICAL SIDE PLATE REINFORCING DETAIL



REF: L & R F D AISC 1ST. EDITION OF MANUAL OF STEEL CONSTRUCTION HAND BOOK
PAGE C-40 E4. BUILT-UP MEMBERS.

AT THE ENDS OF BUILT-UP COMPRESSION MEMBERS SHALL BE CONNECTED BY A WELD HAVING A LENGTH NOT LESS THAN THE MAXIMUM WIDTH OF THE MEMBER = IN COLUMN SCHEDULE TYPICAL SIDE PLATE IS 12¾" x ½", WE PROVIDE 18" CONT. WELD AT EACH END WHICH IS GREATER THE PLATE WIDTH. (FOR CALCULATIONS SEE p. 9 to 12 of this submission)

LONGITUDINAL SPACING FOR INTERMITTENT WELD IS 6 @ 12"
THE MAXIMUM SPACING SHALL NOT EXCEED THE THICKNESS OF THE THINNER OUTSIDE PLATE (thickness) TIMES 127/√Fy NOR 12"

$$S = \tfrac{1}{2}" \times \frac{127}{\sqrt{50}} = 8.98 \text{ IN.} > 6 @ 12 \text{ spacing} = 6" < 9\tfrac{0}{4}"$$

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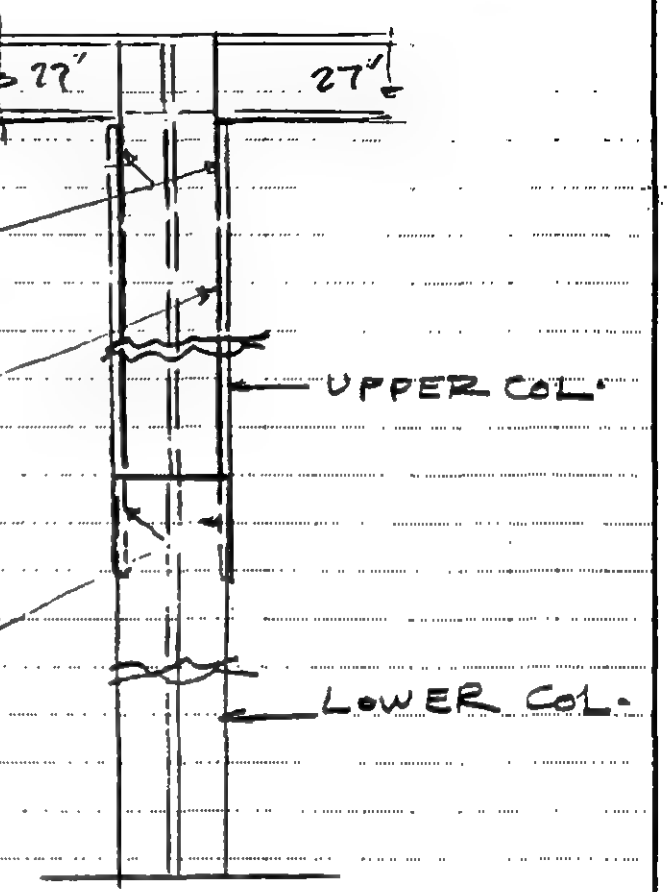
PHONE (212) 949-9150

SHEET NO. 12 OF 5
CALCULATED BY M. DATE
CHECKED BY Structural DATE
SCALE PE Comment #3

LOAD TRANSFER METHOD

CHECK EXIST UNREINFORCED COLUMNS AT FLOOR BEAMS

$$\lambda_c = \frac{1 \times (27+9)''}{\pi r} \sqrt{\frac{50}{29000}}$$



BASED ON THE FOLLOWING CALCULATION EXISTING COLUMNS ARE CAPABLE OF CARRYING FULL DEAD & LIVE LOAD, IF BUCKLING IS CONSIDERED WITHIN FLOOR BEAM LENGTH. THESE FOR EXIST COLUMN NEVER REACH YIELD STRESS. COLUMNS CANNOT BUCKLE UNLESS BUCKLE WITH THE REINFORCING PLATE. CONTINUOUS WELDS AT SPLICE & UNDER FLOOR BEAMS ARE PROVIDED TO TRASFER THE LOAD FROM EXIST COLUMNS INTO PLATES AND BACK INTO EXISTING COLUMNS. INTERMITTENT WELDS ARE PROVIDED FOR LOCAL PLATE BUCKLING

PRODUCT 228-1, ... Inc. ... PHONE TOLL FREE ...

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JOB TWIC 2 SECTION
SHEET NO 13 OF 15
CALCULATED BY [illegible] DATE
CHECKED BY DATE
SCALE

COL NO 74

W14x99

$\begin{cases} A=29.1 \\ I=402 \end{cases} \Rightarrow r = \sqrt{\frac{402}{29.1}} = 3.72$

$\lambda_c = \frac{27''}{\pi \times 3.72}\sqrt{\frac{50}{29000}} = .096$

$F_{cr} = (.658^{(.096)^2})50 = 49.80$

$\phi P_n = .85 \times 49.80 \times 29.1 = 1231 > 714$ O.K.

$P_{PL} = 714 \times \frac{A_R}{A_{TOTAL}} = 714 \times \frac{12.75}{41.85} = 217^K$

WELD LENGTH $= \frac{217}{1.3919 \times 4 \times 4} = 9.74''$ 18" PROVIDED O.K.

COL NO 76

W14x257

$\begin{cases} A=75.6 \\ I=1290 \end{cases} \Rightarrow r = \sqrt{\frac{1290}{75.6}} = 4.13$

$\lambda_c = \frac{27''}{\pi \times 4.13} \times .0415 = .0864$

$F_{cr} = (.658^{(.0864)^2})50 = 49.84$

$\phi P_n = .85 \times 75.6 \times 49.84 = 3203 > 2226$ O.K.

$P_{PL} = 2226 \times \frac{12.75}{88.35} = 321$

WELD LENGTH $= \frac{321}{1.3919 \times 4 \times 4} = 14.41$ 18" PROVIDED O.K.

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JOB ZWTC E SALOMON 3RT-52;
SHEET NO. 14 OF 15
CALCULATED BY J.M. DATE
CHECKED BY DATE
SCALE

column NO. 78

W14X145

$\begin{cases} A = 42.7 \\ I = 677 \end{cases} \Rightarrow r = \sqrt{\frac{677}{42.7}} = 3.98$

$\lambda_c = \frac{27''}{\pi \times 3.98} \times .0415 = .0894$

$F_{cr} = (.658^{(.0894)^2})50 = 49.83$

$\phi P_n = .85 \times 42.7 \times 49.83 = 1808 > 1189^K$

$P_{PL} = \frac{1189 \times 12.75}{55.45} = 273$

WELD LENGTH $= \frac{273}{1.3919 \times 4 \times 4} = 13.16'' < 18''$ O.K.

column NO. 79

W14X311

$\begin{cases} A = 91.4 \\ I = 1610 \end{cases} \quad r = \sqrt{\frac{1610}{91.4}} = 4.20$

$\lambda_c = \frac{27''}{\pi \times 4.20} \times .0415 = .085$

$F_{cr} = (.658^{(.085)^2})50 = 49.85$

$\phi P_n = .85 \times 91.4 \times 49.85 = 3873 > 3056$

$P_{PL} = 3056 \times \frac{12.75}{104.15} = 374$

WELD LENGTH $= \frac{374}{1.3919 \times 4 \times 4} = 17'' < 18''$ O.K.

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JOB 2WTC FOR SATISFACTION PURPOSES
SHEET NO. 1 OF 15
CALCULATED BY K.D. DATE
CHECKED BY DATE
SCALE

Column NO. (80)

W14x233

$\begin{cases} A = 68.5 \\ I = 1150 \end{cases} \Rightarrow r = \sqrt{\frac{1150}{68.5}} = 4.10$

$\lambda_c = \frac{27''}{\pi \times 4.10} \times .0415 = .0870$

$F_{cr} = (.658^{(.0870)^2})50 = 49.84$

$\phi P_n = .85 \times 68.5 \times 49.85 = 2903 > 2131$ O.K

$P_{FE} = 2131 \times \frac{12.75}{81.25} = 334$

WELD LENGTH $= \frac{334}{1.3919 \times 4 \times 4} = 15'' < 18''$ O.K.

Column NO (81)

W14 x 211

$\begin{cases} A = 62.0 \\ I = 1030 \end{cases} \Rightarrow r = \sqrt{\frac{1030}{62.0}} = 4.07$

$\lambda_c = \frac{27}{\pi \times 4.07} \times .0415 = .0876$

$F_{cr} = (.658^{(.0876)^2})50 = 49.84$

$\phi P_n = .85 \times 62.0 \times 49.84 = 2626 > 1576$

$P_{FE} = 1576 \times \frac{12.75}{74.75} = 268$

WELD LENGTH $= \frac{268}{1.3919 \times 4 \times 4} = 12'' < 18''$ O.K.

PRODUCT 225-1 ACCO/Inc Groton Mass 01471 To Order PHONE TOLL FREE 1-800-225-6380

RIDER

ALTERATION APPLICATION #V-7004

ARCHITECTURAL

1. Dwg. #A-2, Second Floor Plan, Auditorium. The basic plan shown shall be supplemented by a complete plan showing the seating, aisles, steps, stage, etc. Also, show dimensions, clarify the access to the Elevator Machine Room, and the function and/or occupancy classification of spaces where not yet shown. (N.Y.C. Building Code Section C26-110.2).

2. Dwg. #A-2, Second Floor Plan. In order for the area north of the auditorium to be classified as a safe area, its clear width throughout shall be not less than eight (8) feet. Increase the width of the safe area legs at the auditorium doors to comply. (Code Section C26-801.11)(3))

3. Provide an updated egress analysis for the Second, Third and Fourth Floor reflecting the latest revisions at these floors, establishing occupant loads, exit capacities and travel distances. Revise the indicated capacity of the direct exit from the auditorium to the street to be not more than the capacity of the street level door minus the occupant load of the building stair also discharging through this door. See Code Articles 6 and 8.

4. Dwg. #A-3, Third Floor Plan.

   a) Identify the function and occupancy classification of spaces where missing. Also identify the intended use of the long closet along the side of the "Lounge".

   b) Clarify if the "Lounge" is still to be considered as part of the safe area at the Second Floor, in which case its serving a classroom, a staff room and a large locker room require to be justified.

   c) Clarify if the two (2) escalators at the north side are to be used also as exits from the floor above in which case their compliance with the requirements of Code Section C26-604.11 shall be substantiated.

5. Dwg. #A-3, Floor Plan. Identify the functions and occupancy classifications to be contained in the building area east of the main lobby, and the type and fire rating of its separation from the lobby. Note that this separation shall comply with the requirements of C26-720.0 (Atriums).

6. Dwg. #A-4, Fourth Floor Plan. Show the relative extent of the dining, serving and kitchen areas, and identify partitions, guardrails and other enclosures. At dining areas show the room layout. (Code Section C26-110.2)

7. Dwg. #A-48, Main Roof Plan.

   a) Clarify if new spaces have been added adjacent to the existing bulkhead and identify their functions.

   b) Verify and substantiate that the egress from the areas or spaces at this level comply with the requirements of Code Table 6-1.

8. Dwg. #A-262, Bulkhead Elevations. Substantiate that the guardrail is designed to comply with the structural requirements of Code Section 27-558. (C26-902.3)(b).

STRUCTURAL

Repeat 9. The report on ceiling anchor tests describes only one test on a Ladd clip. This is not enough to recommend approval. Please revise the ceiling support details. (Repeat comment)

10. The design of the roof framing shall include the loads from the antennae shown on Dwg. No. 6-48.1.

Repeat 11. Verify that the concrete-encased cables shown on Dwg. #E-5 can be supported by the floor above.

ELECTRICAL

*12. Dwgs. #E-5, E-R2: Expanded electric service. Submit complete information on equipment dimensions, clearances, transformer vault wall materials, conductor sizes, overcurrent device settings, containment of spilled transformer fluid and generator fuel, and the boundary separating the area under exclusive control of Con Edison from that under customer control. N.Y.C. Electrical Code sections 27-3048 (B30-44.1), 27-3045 (B30-43.0), 27-3047 (B30-44.0), 27-3272 (B30-246.0), 27-3274 (B30-248.0), 27-3275 (B30-249.0), and Bulletin No. 102-1967 (Revised), and NEC Sections 110-16 and 110-33.

(Modified repeat comment).

13. Dwg. #E-R2. Justify tapping the 13.2KV feeders; clarify hov overcurrent protection of the tap conductors is accomplished, and show the splice chamber on the plans. N.Y.C. Electrical Code sections 27-3093 (B30-82.0), 27-3292 (B30-266.0).

*14. Dwgs. #E-R1, E-R2. Submit short-circuit calculations and tabulation of short-circuit ratings for buses, fuses, switches, and circuit breakers, with corresponding values of short-circuit current. N.Y.C. Electrical Code sections 27-3047 (B30-44.0), 27-3048 (B30-44.1), 27-3067 (B30-59.0); NEC sections 110-9, 110-10. (Modified repeat comment)

15. ESA Voice and Data Cable Specifications, paragraph 2.a. Delete reference to areas having no fire suppression system, so that the referenced cables will be required whenever used outside of metallic raceway to traverse air circulation spaces. N.Y.C. Electrical Code Bulletin No. 126-Revised 1983, NEC Sections 770-6(c), 800-3(b)(3).

16. Flack & Kurtz Specifications, page 19, paragraph 7.c. Substitute non-PVC insulation for THW and THWN wiring.

MECHANICAL

17. Specifications section 14010, "General Conveying Systems Provisions." Add the N.Y.C. Electrical Code to the list of Reference Standards, part 1.02-B.

18. Code Analysis, re: response to comment numbers 8 through 21 of Quality Assurance Division memo dated 12/5/88. Submit revisions conforming with the response.

19. Code Analysis, re: response to comment number 22 of Quality Assurance Division memo dated 12/5/88. PVC wiring is prohibited indoors, even if run in conduit. (Modified repeat comment)

*20. Affix PE or RA seal and signature to all drawings. The "C" and "ELV' series of drawings have not been signed and sealed. N.Y.C. Building Code section 27-157 (C26-110.2). (Modified repeat comment)

MECHANICAL

*21. Submitted HVAC drawings provide only an outline of the design work for the base building HVAC system modifications and do not contain sufficient design information (dimensions, design details, materials, constructin methods, etc.) based on which such work can be reviewed for conformance with the N.Y.C. Building Code. Same applies to submitted outline specifications which are not included in contract documents for mechanical work in this building. See Code Section C26-110.2). (Modified repeat comment).
Detailed review will be performed when above information is received.

22. Design Guidelines VIII, Minimum Standards for Construction in New York City, Engineering Requirements - HVAC:

    a) Add the requirements for Smoke Control in conformance with Code Section C26-1300.8.

    b) For "General Requirements and Constructions Requirements of Fuel Oil Storage Tanks" add requirements of the New York State Department of Environmental Conservation - GNYCRR: Part 612, Part 613 and Part 614.

    c) Revise NFPA 90-A, 1967 to NFPA 90-A, 1981.

    d) Revise NFPA 96, 1964 to NFPA 96, 1984.

e) Revise ANSI-B9.1, 1971 to ANSI-B9.1, 1978.

Consultant's response could not be verified as submitted for review materials, therefore, the comment is herein repeated.

23. Dwg. #HVAC-1. For the new 6500 gallon fuel oil tank and piping indicated on the drawing provide part plans, sections and/or elevations as well as specifications and design details as required to demonstrate conformance with all applicable provisions of Subchapter 14, Article 17 of the N.Y.C. Building Code and standards for new and substantially modified petroleum storage facilities, 6NYCRR, Part 614.

24. Dwgs. #HVAC-5 and HVAC-6. Since outside air intakes shown on these dravings are in proximity of the existing Con Edison Substation venting louvers, please provide HVAC contract documents with clear description of the provision undertaken in this design to prevent the introduction of the potential substation fire into the building. See N.Y.C. Building Code RS 13-1, Sections 2-3.4.3. and 3-3.6.

25. Where modified sheet metal duct risers cross over to other shaft locations on numerous floors in the building, they shall either be enclosed in 2-hour rated construction, (the same as required for shaft enclosures) or fire dampers and access doors shall be installed at the penetrations of all floor slabs and/or shaft walls in conformance with Code Section C26-504.6(c) and RS 13-1, Section 3-3. (Repeat comment)

26. Dwg. #HVAC-47. Provide part plans, sections and/or elevations as required to clarify the location, connection points and coordination with O.A. ducts for the new 64 x 48 smoke exhaust system duct section. See Code Section C26-110.2. Also provide in this duct the code required opening protectives at penetrations of all rated partitions in conformance with RS 13-1, Section 3-3. (Repeat comment)

27. Dwg. #HVAC-48. For new air handling units, provide and show on the plans the physical locations of duct mounted smoke detectors in conformance with RS 13-1, Section 4-3. The same requirement is applicable to the air handling units with capacities greater than 15,000 cfm. Show the protection against combustion of air filter systems in conformance with requirements of RS 13-1, Section 2-4.1.2.

Salomon Bros W-7004 (6)

Telephone conversation 1/13/89
A. Hood called A. Tamboli.

The reason for the call was that there did not appear to be a response to comments #15 and 16 of the rider dated 12/20/88. Absence of a response to these comments would result in a recommendation to withhold approval.

A. Tamboli said that the computations for the columns were to be found in the calculation books submitted. He gave, as an example, page DN-9 of Book No. 2. I pointed out to him that this page is a computer print-out which does not explain how the problem described in our comments has been handled.

Since Tamboli did not seem to know what the comments said I read #15 to him. He then explained that, under ultimate stress design, stress is transferred to the reinforcing plates as the stress in the original column approaches yield, and that

while the comment would be applicable when using working stress design it is not applicable to ultimate stress.

He also said that the reinforcing plates increase the moment of inertia enough to eliminate any buckeling problems that might arise as a consequence of doubling the column length.

Also provide plans of the stair and related floor areas at the lower level. (27-157 (C26-110.2)).

STRUCTURAL

*15. When an existing column is strengthened the stress in the column, due to loads that cannot be removed, remains unchanged by the reinforcement. The final stress in the original column is equal to this residual stress plus the stress from subsequent loads applied to the reinforced section. The submitted calculations do not examine this condition. Please revise and resubmit.

*16. The investigation of the double-length columns shall consider the effects of the change in cross-section at mid-height, and the strength of the splice.

*17. The structural comments of the memo, A. Coras to R. Linn, dated 12/5/88 are outstanding.

ELECTRICAL

*18. Comment numbers 16 through 20 of the Memorandum, A. Coras to R. Linn, dated 11/2/88, and comment numbers 8 through 22 of the Memorandum, A. Coras to R. Linn, dated 12/5/88, remain outstanding.

*19. Communications drawings ("C" series). Affix PE or RA seal and signature. N.Y.C. Building Code Section 27-157 (C26-110.2).

MECHANICAL

20. Comment numbers 21 and 22 of the Memorandum A. Coras to R. Linn, dated 11/2/88, and comment numbers 24, 25 and 26 of the Memorandum A. Coras to R. Linn, dated 12/5/88, remain outstanding.

*21 Submitted drawings #HVAC-45, HVAC-46 and HVAC-47 provide only an outline of the design work for the building's core but do not contain sufficient design information (dimensions, design details, materials, construction methods, etc.) based on which such work can be reviewed for conformance with the N.Y.C. Building Code. See Code Section 27-157 (C26-110.2).

22. Dwg. #HVAC-45. Where the 44 x 24 toilet exhaust duct crosses over to another shaft location it shall either be enclosed in 2-hour rated construction (same as required for shaft enclosures), or fire dampers and access doors shall be installed in the duct at penetrations of fire rated partitions (See Dwg. #A-45), floor slabs, and/or shaft walls in conformance with N.Y.C. Building Code, Section 27-344 (C26-504.6).(c) and RS 13-1, Section 3-3.

4

PA 2127
1-85

TENANT ALTERATION REVIEW REQUEST

CHECK APPLICABLE ROUTING	ROOM NO.
Engineering (T.C.R.U.)	43NE
Risk Management – JSTC – Zip 43	6 FL
Operations Standards – JSTC – Zip 75	5 FL
Terminal Properties Div.	56S
Control Desk	
Facility Manager –	
Port Dept. - Planning Div.	64S
Aviation Technical Services Div.	65S
Air Terminal Properties Div.	
JFK – Business Administration – Zip 6	
NIA – Business Administration – Zip 19	
Marine Development & Rentals Div.	71E
Inspection & Safety	
Resident Engineer	

Description of Work: LISTED BELOW

FACILITY: 7 WTC
APPLICANT'S NAME: SALOMON BROS
APPLICATION NO.: W-7004
DRAWING NO(S).:
DATE: 1 / 5 / 89

☐ You are requested to review the attached application and forward your comments to:

☐ Attached are revised drawings. Please review only those items on which exception was previously taken and send your comments to:

Org. Unit	Room No.	Contact	Ext.
821	74 S	L. SANCHEZ	8566

No later than _____ Title: PROJ. ADMIN.

If no reply is received by above date, your concurrence will be assumed unless arrangements have been made for additional time for review.

FOR USE OF REVIEWING DEPARTMENT

COMMENTS: (Use reverse side if necessary) Indicate next to each comment whether it is a condition or recommendation.

(1) Letter: M. Fernandez / L. Sanchez dated Jan. 3, 1989 transmitting / S.O.M.'s comments

(2) Comments: S.O.M. / M. Fernandez dated Dec. 21, 1988 "--- point by point" responses. (—27 TCRU comments)

(3) BS&A CADDY GAT CHANNEL CLAMP

(4) SK-1008 Revised Dec. 15, 1988 - 35th FLR. EGRESS DIAGRAM

(5) STRUCTURAL COMPUTATIONS - P.A. COMMENT RESPONSE DATED DEC. 16

(6) Copy of TCRU COMMENTS

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
JAN 05 1989
W-7004
office copy.

(6)

LICIANO
L. SANCHEZ

se check applicable box)

ALTERATION APPLICATION

Approved ☐ Approved with Conditions and Recommendations Noted Above ☐ Disapproved with Requirements for Approval Noted Above ☐ Disapproved for Reasons Noted Above

Signature	Title	Date
		/ /

6

IGC

Member The Cantor/Seinuk Group

SALOMON BROTHERS INC.

BASE BUILDING MODIFICATIONS

7 WORLD TRADE CENTER

STRUCTURAL COMPUTATIONS

(PORT AUTHORITY COMMENT RESPONSE)

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
JAN 05 1989
W - 7004
ALTERATION APPLICATION

6

office Copy

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219 EAST 42ND STREET
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PHONE (212) 949-9150

JOB 7 WTC

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE DEC. 16

CHECKED BY _____ DATE _____

SCALE _____

7 WTC

SALOMAN BROS INC.

BASE BUILDING MODIFICATIONS

PORT AUTHORITY COMMENT RESPONSE

Member: The Cantor/Seinuk Group

THE OFFICE OF IRWIN G. CANTOR, P.C. / CONSULTING ENGINEERS
219 EAST 42ND STREET • NEW YORK, NEW YORK 10017 • TELEPHONE: (212) 949-9150
IRWIN G. CANTOR, P.E., F.A.C.I. chief executive officer — YSRAEL A. SEINUK, P.E., F.A.C.I. president

MEMORANDUM

To: File

From: Akbar Tamboli

Date: December 14, 1988

Re: 7 World Trade Center Base Building Modifications for Salomon Brothers Inc., Structural Review Comments given at meeting December 12, 1988 with the Port Authority of New York and New Jersey
IGC Job No. 88057-200

The following is the response to the Port Authority. Construction review comments given to us at meeting on December 12th, 1988. The response is arranged in the same sequence as the review comments.

Comment No. 4. Calculation sheets for mezzanine hangers MS-1 thru MS-22 are enclosed herewith reflecting the reference to the hangers.

Post symbols have been revised to denote as hangers to match drawings S-14, S-16 and S-18. Hanger loads shown on drawings indicate the connection loads which have reserve capacity; this has been noted in enclosed computations.

Comment No. 5. Detail 4/A.200 shows 3 inch concrete for raised slab in toilet areas of trading floors. Trading floor is designed for 100 psf live load. The combined loading in raised slab areas is less than 100 psf; see enclosed computations. Any future raised slab areas if added at other locations will be checked as part of tenant work.

Comment No. 6. The ceiling system used presently at 7 World Trade Center and tested in the presence of the Port Authority of NY and NJ is proposed to be used for new ceiling support. See attached report.

Comment No. 7. Computations for all affected columns are submitted with the December 19th, 1988 submission package.

AT/mm

12-14-88

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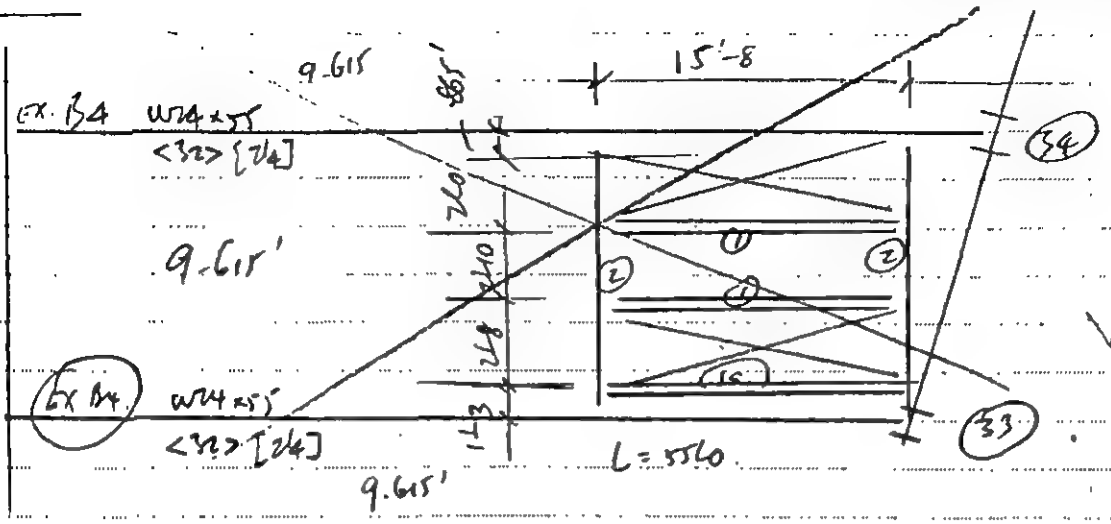
JOB 7 WTC
SHEET NO. N -1 OF
CALCULATED BY [illegible] DATE 10-1-88
CHECKED BY DATE
SCALE

Typ FL.

PA Comment #4

Typ. FL.



VOID

1) L = 15.67'

USE W12x16 *

$\phi M_p = 54.3'^k$

$B_{m} = 0.02 + 0.05 \times 1.75 = 0.088^{k/'}$

$0.084 \times 1.75 = 0.147$

$0.167 \times 1.2 = 0.2$

$0.079 \times 1.75 = 0.138 \times 1.6 = 0.221$

$0.305 \quad 0.421$

TL : 2.4
DL : 0.7
ULT : 3.3

$+M_u = 13'^k$

VOID

1a) L = 15.67'

W12x16 *

$B_{m} = 0.02 + 0.05 \times .955 = 0.068$

$0.084 \times 0.955 = 0.08$

$0.10 \times 1.2 = 0.120$

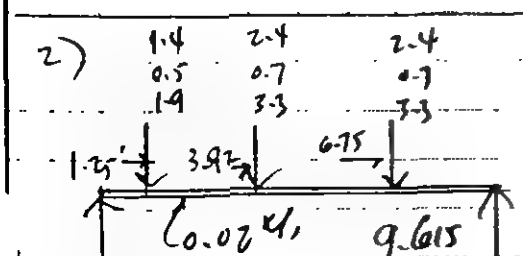
$0.079 \times 0.955 = 0.075 \times 1.6 = 0.121$

$0.175 \quad 0.241$

TL = 1.4
DL = 0.5
ULT = 1.9

2)

W12x16 *

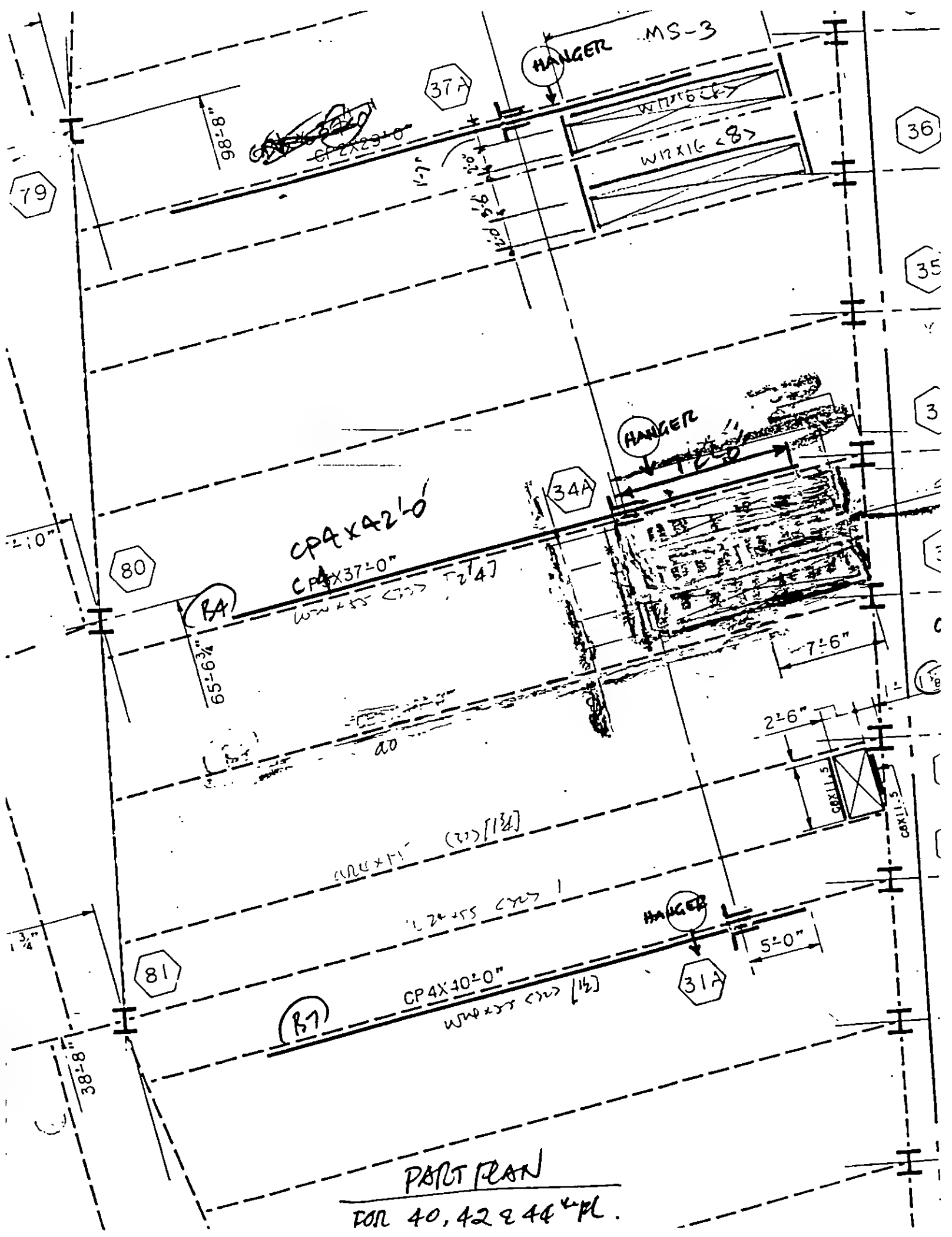


$+M_u = 13.19'^k$

TL = 3.45 0.02
DL = .76 0.024
ULT = 4.71

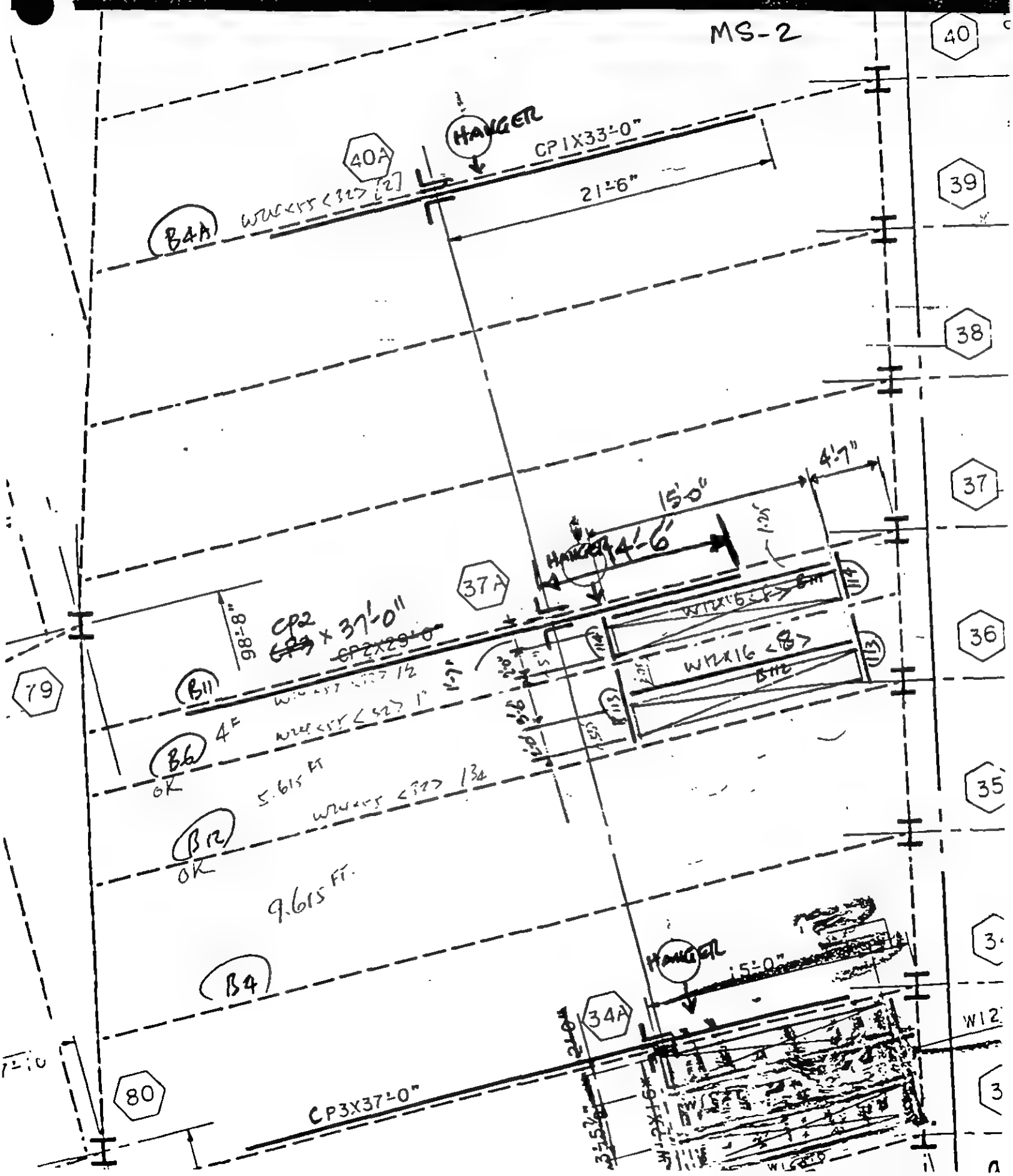
TL = 2.94
DL = 0.88
ULT = 4.024

PRODUCT 205-1 [illegible] Inc. Groton, Mass. 01471 To Order PHONE TOLL FREE [illegible]



PART PLAN

FOR 40, 42 & 44 KIPL.


MS-2
40
39
38
37
36
35
34
34A
37A
40A
79
80
HANGER
CP1X33'-0"
21'-6"
B4A
4'-7"
15'-0"
14'-6"
HANGER
CP2 x 37'-0"
CP2X29'-0"
98'-8"
B11
B6
4F
OK
5.615 FT
B12
OK
9.615 FT.
B4
HANGER
15'-0"
CP3X37'-0"
W12X16 <8>
B112
W12

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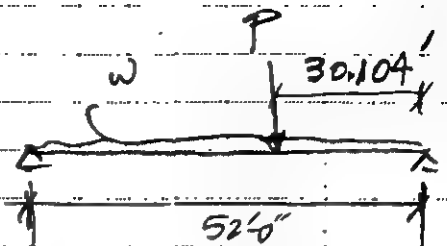
JOB 7WTC N.Y.
SHEET NO. MS4 OF
CALCULATED BY KM DATE
CHECKED BY DATE
SCALE

$F_y = 50$ KSI (REINF)

Beam 4A



EXIST W24x55

$w_D = 9.83 \times 53 = .521$ K/L.F 0.605

$w_{SDL} = 9.83 \times 29 = .285$ K/L.F 0.342

$w_{L.L} = 9.83 \times 44 = .433$ 0.643

$w_u = 1.66$

$R_D = 13.54$ $M_D = 172$ $R_D = 13.54$

$R_{SD} = 28.25$ $M_{SD} = 550$ $R_{SD} = 22.56$

$R_{LL} = 22.83$ $M_{LL} = 396$ $R_{LL} = 19.68$

$V_u = 86.68$ $V_u = 74.8$

NEW CONC. D.L.

$P_D = 0$

$P_{SD} = 12^K + 24 = 36$

$P_{LL} = 24 \times \frac{44}{53} = 20^K$ REDUCED

56^K

(CONNECTION LOADS SHOWN ON PLAN = $70 \times 1.33 = 93^K$ 70 KIPS NON REDUCED LOAD IS USED TO ALLOW HIGHER SAFTEY FACTOR FOR CONNECT DESIGN)

RESPONSE COMMENT #4

$M_{ult} = 1.2(172 + 550) + 1.6(396) = 1500$

FOR W24

$A_{req} \approx \frac{1500 \times 12}{24 \times 50} = 15.0 \text{ IN}^2$ KSI

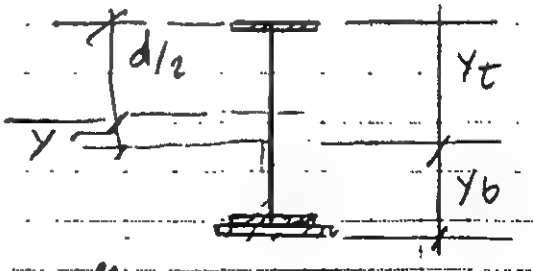
$A_{PROV} = \frac{770 \times 12}{24 \times 50} = 7.7 \text{ IN}^2$

$A_{req} = 7.5$ TRY 10" x 3/4" PLATE A = 7.5 IN

A) CHECK BY LRFD FORMULAS

$C = \Sigma G_n = 378$

$P_{yf} = 7 \times .505 \times 50 = 177$



$2Y(.395) = 7.5 \text{ IN}^2$

$\Rightarrow Y = 9.49$

$Y_b = \frac{23.57}{2} + .75 - 9.49 = 3.045''$

$Y_t = \frac{23.57}{2} + 9.49 = 21.275''$

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JOB 7W 2
SHEET NO. MS5 OF
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$C = 378^K$

$P_W = .395 \times 22.56 \times 50 = 446^K$

$P_{yBF} = (7.5 + .505(7))50 = 551$

$P_{yF} = (.505)(7)(50) = 177$

$P_{yF} + C = 378 + 177 = 555 < 551 + 446 \Rightarrow$ NA IN WEB

$a = \frac{378}{.85 \times 56' \times 118} = 1.08''$

$M_p = 177\left(21.275 - \frac{.505}{2}\right) + \frac{(21.275 - .505)^2}{2} .395 \times 50 + 7.5 \times 50\left(3.045 - \frac{.75}{2}\right)$

$+ 177\left(3.045 - .75 - \frac{.505}{2}\right) + \frac{(3.045 - .75 - .505)^2}{2} \times .395 \times 50$

$= 3721 + 4260 + 1001.25 + 362 + 32$

$= 9376$

$M_{pw} = .25(446)(22.56) = 2515$

$M_n = 378\left(3 + 2.5 - \frac{1.08}{2} + 21.275\right) + 4458 - \frac{(378)^2}{(446)^2} \times 2515$

$= 9916 + 9377 - 1807 = 17486 = 1457^{K'}$

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JOB 71 7C
SHEET NO MS 6 OF
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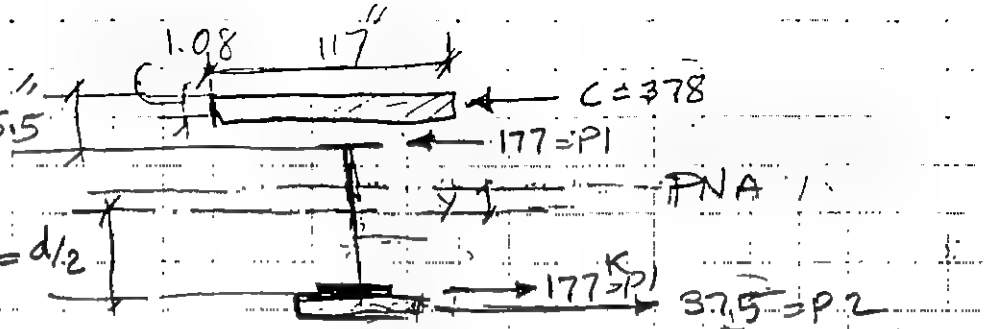
SCALE

CHECK BY LONG HAND CALC



$$y = \frac{375-378}{.395\times50\times2} = .08''$$

$$M_N = 378\left(4.96 + 11.70\right) + 177\left(11.70 - \frac{.505}{2}\right) + \frac{(11.70-.505)^2}{2}\times.395\times50$$

$$+ 375\left(11.78 + .75/2\right) + 177\left(11.78 - \frac{.505}{2}\right) + \frac{(11.78-.505)^2}{2}\times.395\times50$$

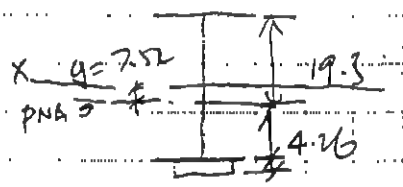
$$= 6297 + 2024 + 1237 + 4558 + 2040 + 1255$$

$$= 17413 = 1452\ K'$$

$M_u \phi M_n = 1452 \times .85 = 1234 < 1493$ N.G.

Try $9'' \times 1\frac{1}{2}''$

$P2 = 13.5\times50 = 675$



$$y = \frac{675-378}{.395\times50\times2} = 7.52$$

$$M_N = 378\left(4.96 + 19.30\right) + 177\left(19.30 - \frac{.505}{2}\right) + \frac{(19.3-.505)^2}{2}\times.395\times50$$

$$+ 675\left(4.26 + .75\right) + 177\left(4.26 - \frac{.505}{2}\right) + \frac{(4.26-.505)^2}{2}\times.395\times50$$

$$= 9170 + 3371 + 3488 + 3382 + 709 + 140$$

$$= 20260 = 1688 = \cancel{1430}$$

$M_u = .85\times1688 = 1436 < 1500$ N.G.

use TOP REINF

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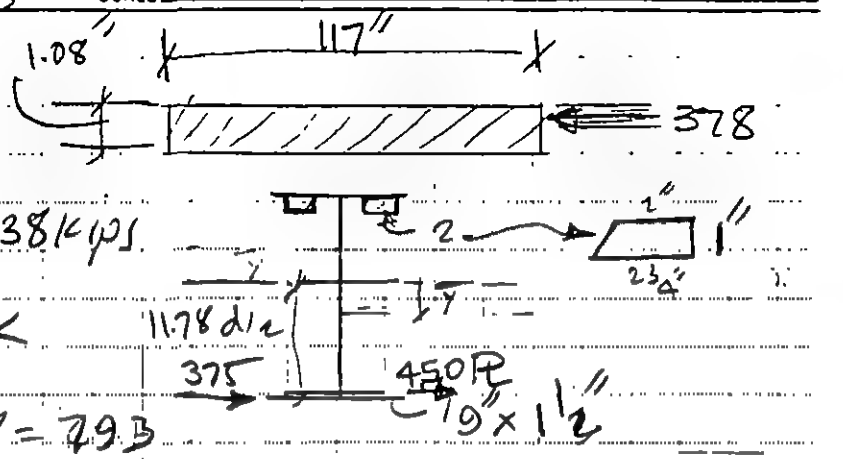
B4A TOP & BOTTOM PLATES



$A_{TOP\,REIN} = 2.375 \times 1 \times 2$
$= 4.75\ in^2$

$A_{S\,TOP\,REINF} = 4.75 \times 50 = 238\ kips$

$P_{bottom\,flange} = 675 + 177 = 852^K$

$P_{top\,flg+C} = 378 + 177 + 238 = 793$

$852 > 627$

$W_{e6} = 446 \longrightarrow$ N.A. IN WEB

$$\bar{y} = \frac{675 - 378 - 238}{.395 \times 50 \times 2} = 1.49$$

$$M_N = 378\left(13.27 + 4.96\right) + 177\left(13.27 - \frac{.505}{2}\right) + 238\left(13.27 - .505 - .5\right)$$
$$+ \frac{(13.27 - .505)^2}{2} \times .395 \times 50 + 675\left(10.29 + .75\right) + 177\left(10.29 - \frac{.505}{2}\right)$$
$$+ \frac{(10.29 - .505)^2}{2} \times .395 \times 50$$

$= 6890 + 2304 + 2919 + 1609 + 7452 + 1777$
$+ 946$
$= 23,897 = 1991'$

$\phi M_n = 1692\ K' > 1500\ K'$ o.k.

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JOB ZWT
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BEAM (4A)

CHECK BEAM Shear Capacity

$V_{ult} =$

$\frac{h}{tw} = \frac{23.57 - 1.313 \times 2}{.395} = 53.02$

$187\sqrt{\frac{K}{F_{yw}}} = 187\sqrt{\frac{5}{50}} = 59.13 > h/t_w$

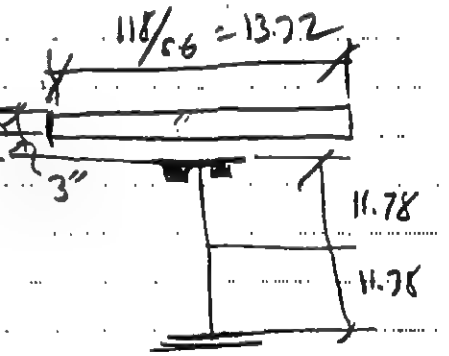
$V_n = .6 \times 50 \times 23.57 \times .395 = 279^{kips}$

$R_w = .9(279) = 251^{kips}$

$R_{wlt} = (13.5 + 28.25)(1.2) + 22.83(1.6)$

$= 89^{k}$ O.K.

check live load deflection



$\bar{y} = \frac{13.5^{in^2}(.175) + 16.2(11.78+1.5) + 4.75(24.06) + 13.72(2.5)(29.32)}{13.5 + 16.2 + 4.75 + 34.30}$

$= \frac{10.13 + 215 + 114.29 + 1005.74}{68.75} = 19.57$

$I_{cr} = (2.5)^3(13.72)/12 + 1350 + 34.30(29.32 - 19.57)^2$
$+ 4.75(24.06 - 19.57)^2 + 16.2(19.57 - 13.28)^2 + 13.5(14.82)^2$

$= 17.87 + 1350 + 3261 + 95.76 + 641 + 2965 = 8331$

$I_{steel} =$

$\bar{y} = \frac{135(.175) + 16.2(13.28) + 4.75(24.06)}{13.5 + 16.2 + 4.75} = 9.86''$

$I_{steel} = 1350 + 4.75(24.06 - 9.86)^2 + 16.2(13.28 - 9.86)^2 + 13.5(9.86 - .75)^2$

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JOB 2WT
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Beam (4A) CONT'd

$I_{STEEL} = 1350 + 956 + 189 + 1120 = 3615$

$I_{eff} = 3615 + \sqrt{\frac{378}{810}}(8331 - 3615) = 6837\ IN^4$

$\Delta_{T.L.} = (1.94 + 2.311 - 2") = .225 < 2.60$ O.K.

$\Delta_{L.L.} = .83" < \frac{L}{360}$ O.K.

CHECK CUTOFF POINT FOR REINF.

BEAM CAPACITY = 770 K'

$770 = 86.68(X) - \frac{1.66(X)^2}{2}$

$770 = 86.68X - .830X^2$ $\quad X = \frac{+86.68 \pm \sqrt{(86.68)^2 - 4(.83)(770)}}{2(.83)}$

$.62X^2 - 86.67X + 905 = 0$

$= \frac{86.68 \pm 70.406}{2(.83)} = 9.804'$

$L = 52 - 2(9.804) = 32.4'$

say 9'6 - 1 = 8'6

use 35'-0" FOR DEVELOPMENT purpose 1'-0" continuous weld EACH END

DESIGN OF WELD:

As of batt pl $9 \times 1.5 = 13.5$

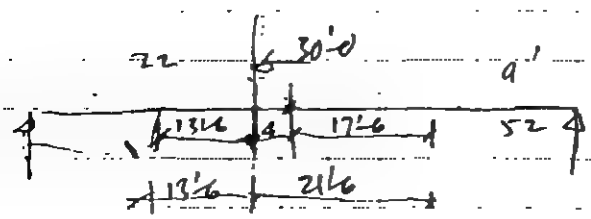
$F = 13.5 \times 50 = 675^K$

$F = \frac{675}{2 \times 13.5} = 25^K/FT$

Use 1/4" F.W. 3@8"

$= 3 \times 31.5 \times .707 \times 1/4 = 16.7^K/8"$

$= 16.7 \times 12/8 = 25^K/FT.$ OK



LHS 10'6

RHS 8'6

52 - 19'0 = 33'0

$770 = 74.8X - \frac{1.66}{2}(X)^2$

$770 = 74.8X - 0.83X^2$

$X = 11.85'$ say 11'6 - 1 = 10'6

$L = 52 - 11.85 - 9.8 = 30.35'$

$\frac{2}{32.35}$

say 33'0

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JOB 7 JTC
SHEET NO MS10 OF
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SCALE

38TH FL.

(B111) L = 15'-8" S = 1.25/2 = 0.625 FT.

USE W12x16 <8>

(B112) L = 15'-8" S = 2.75/2 = 1.375 FT + 4" = 1.7 FT. W12x16 <8>

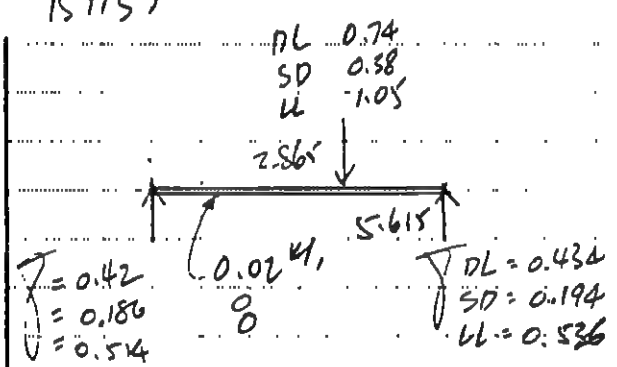
DL. 0.055 x 1.7 = 0.094
SDL 0.029 x 1.7 = 0.049
0.143 K/

LL 0.079 x 1.7 = 0.134
0.277 K/

DL : 0.736 K
SD : 0.384
LL : 1.05

(B113)

W12x16
<4>



(114) L = 4'-0"

W12x16
<4>

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JOB 7 a c
SHEET NO MS 11 OF
CALCULATED BY DATE oct 24
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SCALE

387 FL.

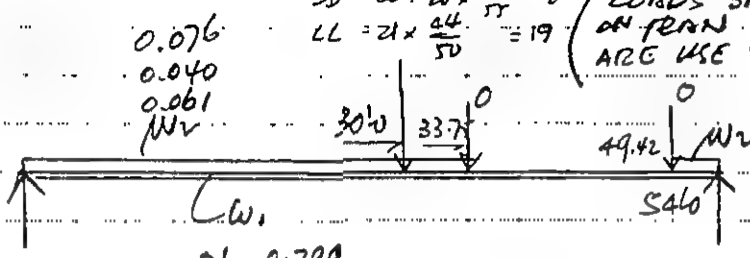
W24×55 <32> [1½]

B 1.1.

DL = 0
SD = 20 + 20 × 29/55 = 31
LL = 21 × 44/50 = 19

*(CONNECTION LOADS SHOWN ON PLAN ARE USE SAME LOAD AS BEAM 4A SEE SHT MS4)

A > 600 PSF
LL use 55% × 79 = 44
RESPONSE COMMENT #4



W_1 DL 0.055 × 9.615/2 + .615 = 0.299 k/'
SD 0.029 × 5.433 = 0.158
LL 0.044 × 5.433 = 0.239

W1
DL . 0.299
SD . 0.158
LL . 0.239

R: DL = 9.85, SD = 18.98, LL = 16.73

R: DL = 9.2, SD = 22.09, LL = 12.92

W_2 DL 0.055 × (2 − 0.625) = 0.076
SD 0.029 × (1.375) = 0.040
LL 0.044 × 1.375 = 0.061

+M: DL = 130, SD = 480, LL = 355

Mu: DL = 156, SP = 576, LL = 568
+Mu = 1300 'K

b = 9.615/2 × 12 + 6 = 61
ΣQ = 476

Δ: DL = 2329, SD = 7182, LL = 5111 > 12,693 in/in

N = 32 ΣQ = 378

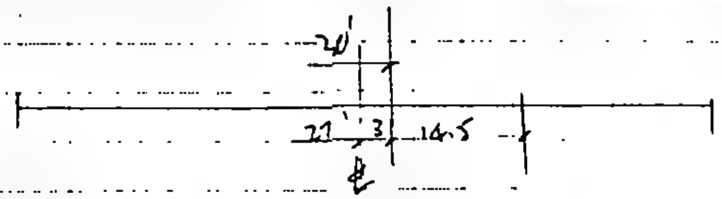
use CP2 × 37'0.
9 × 1¼ bott PL.
2 - 2¾ × 1 TOP PL.

check welding.
¼" F.W 6" @ 12

Weld capacity: 1.392 × 4 × 6 = 33.406 K/1

$F = 9 \times 1.25 \times 50/2 = 281.25$

$L = \frac{281.25}{33.406} = 8.42$ FT. < 14.5 FT. ok



use CP2 × 37'0
ok.

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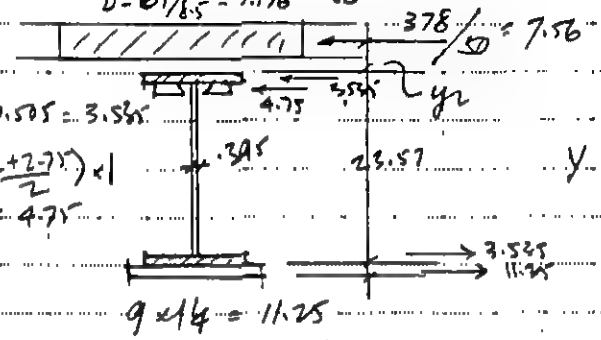
JOB 7 ITC
SHEET NO K.F.C. OF
CALCULATED BY MS12 DATE
CHECKED BY DATE
SCALE

38th pl.

B11) W24×5T <32> [1½]

$b = 61/8.5 = 7.176$ $A_c = 2.5 \times 7.176 = 17.94$



$7 \times 0.505 = 3.535$

$2 \times \left(\frac{2+2.75}{2}\right) \times 1 = 4.75$

$a = \frac{378}{2.975 \times 61} = 2.083$ $Y_2 = 4.46$

$y = \frac{11.25 + 3.535 - 4.75 - 3.535 - 7.56}{2 \times .395} = -1.342$

$y_t = 11.785 - 1.342 = 10.443$

$y_b = 11.785 + 1.342 = 13.127$

$\phi M_n = 0.85 \times 50/12 \times \{ 7.56 \times (4.46 + 10.443) + 3.535 \times (10.443 - .2525) +$
$+ 4.75 \times (10.443 - 0.505 - 0.5) + .395 \times \frac{1}{2} \times (10.443 - .505)^2$
$+ .395 \times \frac{1}{2} \times (13.127 - 0.505)^2 + 3.535 \times (13.127 - 0.2525)$
$+ 11.25 \times (13.127 + 0.625) \}$

$= 3.592 \times \{ 112.667 + 36.023 + 44.831 + 19.506 + 31.465 + 45.511 + 154.710 \}$

$= 3.54 \times 444.713$

$= 1574.282^{'K} > 1300^{'K}$ OK

I steel = $y_s = \frac{11.25 \times 0.625 + 16.2 \times 13.035 + 4.75 \times 23.815}{11.25 + 16.2 + 4.75 = 32.2} = 10.289$

$I_s = 1350 + 11.25 \times (10.289 - 0.625)^2 + 16.2 \times (13.035 - 10.289)^2 + 4.75 \times (23.815 - 10.289)$
$= 3391.852 \text{ in}^4$

I_{tr}: $y_{tr} = \frac{17.94 \times 29.07 + 32.2 \times 10.289}{17.94 + 32.2} = 17.009$

$I_{tr} = 3391 + 17.94 \times (29.07 - 17.009)^2 + 32.2 \times (17.009 - 10.289)^2 = 7454.791$

$I_{eff} = 3392 + \sqrt{\frac{378}{476}} \times (7455 - 3392) = 7013$

$\Delta_{DL} = \frac{2329}{1350} = 1.725$

$\Delta_{LL} = \frac{12693}{7013} = 1.810 \leq \frac{L}{360} = 1.800$

$3.535 - 1.5 = 2.035 < \frac{L}{240} = 2.7$

OK

CP2. use 9×1¼×3.76 bolt pl & 2-2¾×1" Top

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JOB 7 WTC
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RESPONSE COMMENT #4

B4 @ col line (34).

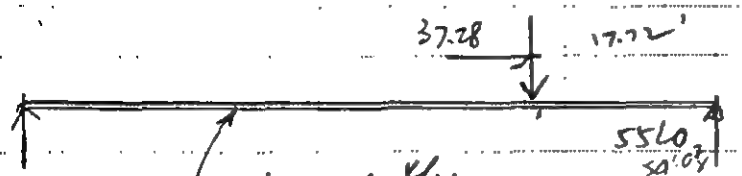
A > 600

DL = 0
SD = 14 + 14 × 29/55 = 22^K
LL = 17 × 44/55 = 15^K

(CONNECTION LOADS SHOWN ON PLAN ARE USE SAME LOAD AS BEAM 4A)

LL = 55% × 79 = 44 PSF

SEE SHT MS-4



$W_{DL} = 0.055 \times 9.83 = 0.541$
$W_{SDL} = 0.029 \times 9.83 = 0.285$
$W_{LL} = 0.044 \times 9.83 = 0.433$

DL = 14.88
SDL = 14.93
LL = 15.77
$V_u = 61^K$

DL 0.541 k/' .649
SDL 0.285 .342
LL 0.433 .693
$w_u = 1.684$

DL = 14.88
SDL = 22.75
LL = 20.04
$V_u = 77.22^K$

(WORKING LO)

$+M_{DL}^{37.28} = 179^{'K}$
$+M_{SDL} = 358$
$+M_{LL} = 269$
$\Sigma M = 806^{'K}$

$+M_u = 1.2(179 + 358) + 1.6 \times 269 = 1075^{'K}$

$\Delta_{DL}^{\mathbb{C}} = 3841$ IN/IN
$\Delta_{SDL} = 5808$
$\Delta_{LL} = 5138$
$= 10946$ IN/IN

Reqt to Bm $\frac{W24 \times 55}{\langle 32 \rangle [2/4]}$ is Reqd.

$\frac{L}{360} = 1.833$
$\frac{L}{240} = 2.75$

$\Delta_{DL} = \frac{3840}{1350} = 2.844$
2.25
$.59$

$e = 2.133$ use 2/4" OK.

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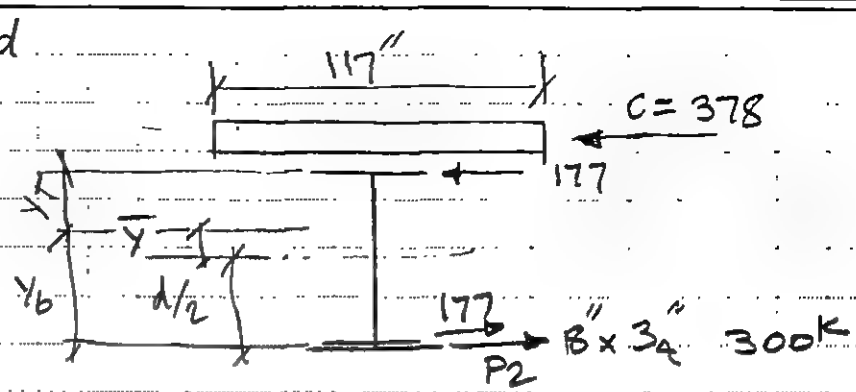
JOB: TNTC
SHEET NO.: X-314 OF
CALCULATED BY: K.M DATE: 10/26/88
CHECKED BY: DATE:
SCALE:

B4 @ LINE (34) CONT'd



TRY CP-4

$P2 = 6''(50^{KSI}) = 300^{KIPS}$

$\bar{Y} = \frac{378-300}{.395 \times 2 \times 50} = 1.97$

$Y_b = 11.78 + 1.97 = 13.75''$

$M_N = 378(4.96 + 9.81) + 177\left(9.81 - \frac{.505}{2}\right) + \frac{(9.81-.505)^2}{2} \times .395 \times 50$

$+ 300(13.75 + .75/2) + 177\left(13.75 - \frac{.505}{2}\right) + \frac{(13.75-.505)^2}{2} \times .395 \times 50$

$= 5583 + 1692 + 855 + 4238 + 2389 + 1732$

$= 16489 \Rightarrow \phi M_n = 1170^{K'} > 1075^{K'}$ O.K.

CHECK DEFLECTION

$b/n = \frac{117}{8.5} = 13.76 \quad A_c = 34.4$

$Y_b = \frac{6(.38) + 16.2(\overset{12.53}{11.78 + .75}) + 34.4(28.56)}{6 + 16.2 + 34.4} = \frac{1188}{56.6} = 20.98''$

$I = 1350 + (6)(20.98 - .38)^2 + 16.2(20.98 - 12.53)^2 + 34.4(28.56 - 20.98$

$= 1350 + 2546 + 1156 + 1976 = 7028$

$I_{eff} = 1997 + \sqrt{\frac{378}{810}}(7028 - 1997) = 5434$

$\Delta_{total} = \frac{5138 + 5808}{5434} + .59 = 2.60'' < \frac{L}{240}$ O.K.

$\Delta_{LL} = \frac{5138}{5434} = .95 < \frac{L}{360} = 1.833$ O.K.

CUT OFF POINT

USE 3/4" SPAN FOR LENGTH = .75 x 55 = 42 ft

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MS15

POSITE BEAM RESULTS

[illegible]W24X55
[illegible].2 Kips
[illegible]= 2508.0 Kips

COVER PLA
WIDTH= 8 in
THICKNESS= .75 in

COVERPLATE
AREA= 22.2 IN^2
I= 1997.693 IN^4
YB= 9.248513 IN
ST= 132.5478 IN^3
SB= 216.0015 IN^3

MATERIALS
FY= 50 ksi
F'c= 3500 psi
W= 145 PCF
d= .75 in
STUD CAP= 11.5 Kips

SLAB
Bc= 117 in
Hc= 5.5 in
Tc= 2.5 in

FULL COMPOSITE
Vh= 435.0938 Kips
N*STOP= 6793.345 in^3
N1= 37.83424
N= 76
Itr= 7051.598 IN^4
STR= 335.9638 in^3

PARTIAL COMPOSITE
V'h= 183.1974 Kips
% COMPOSITE=42.11
N1= 16
N= 32
Ieff= 5277.1 in^4
Seff= 293.8433 in^3

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JOB 7 WTC
SHEET NO. 1516 OF
CALCULATED BY [illegible] DATE Oct 24 [illegible]
CHECKED BY DATE
SCALE

3 [illegible]

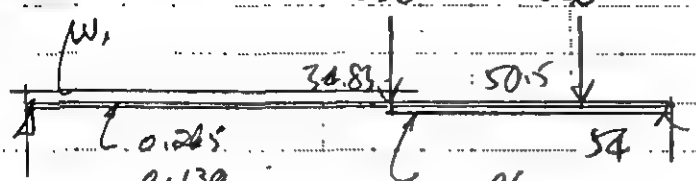
W24x55 <32> [1]

B6)

DL 0.6 0.6
SD 0.2 0.2
LL 0.6 0.6

$A = 34.83 \times \frac{9.615}{2} = 167$ SF (4.81)

LL = 85% = 67 PSF
.85 × 79



0.265
0.139
0.322

0.096
0.051
0.117

W_1 DL 0.055 × 4.81 = 0.265 K/'
SD 0.029 × 4.81 = 0.139
LL 0.067 × 4.81 0.322

W_2 DL 0.055 × 1.75 = 0.096
SD 0.029 × 1.75 = 0.051
LL 0.067 × 1.75 = 0.117

DL = 6.885
SD = 3.565
LL = 8.275

DL = 5.44
SD = 2.709
LL = 6.437

$+M$ DL = 88 'K
SD = 45
LL = 106

$+M_u$ DL = 106 'K
SD = 55
LL = 170
331 'K

< $\phi_n M_p$ = 503 'K

NON-comp Beam
is OK.

DL = 1567 IN/IN
SD = 805 > 2688
LL = 1883

PRODUCT 205-1 [illegible] Inc. Groton, Mass. 01471 To Order PHONE TOLL FREE 1-800-225-6380

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Consu Engineers
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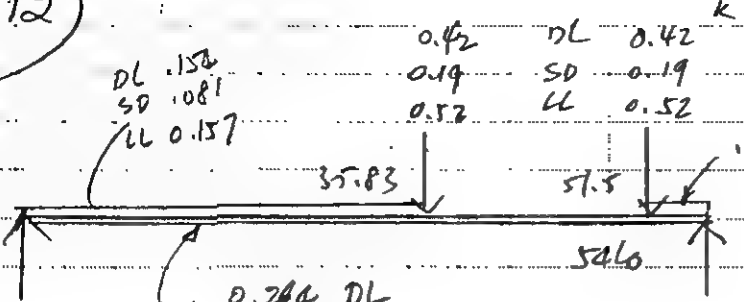
NEW YORK, N.Y. 10017
PHONE (212) 949-9150

JOB 7 WTC
SHEET NO 1 17 OF
CALCULATED BY RJC DATE Oct 24 '01
CHECKED BY DATE
SCALE

387 KL

B12)

W24×55 <32> [13k]



$A = 9.615 \times \frac{1}{2} \times 54 = 260$

$35.83 \times \frac{5.615}{2} = 100$

360

LL = 70% = 56 PSF.

0.264 DL
0.139 SD
0.269 LL

$\sum$ DL = 10.985
SD = 5.77
LL = 11.23

$\sum$ DL = 10.014
SD = 5.221
LL = 10.35

W1 DL $0.055 \times \frac{9.615}{2} = 0.264$

SD $0.029 \times \frac{9.615}{2} = 0.139$

LL $0.056 \times \frac{9.615}{2} = 0.269$

+M DL = 144 k
SD = 76
LL = 148

+M DL = 173 k
SD = 91
M_L = 237

$+M_H = 501$ k

W2 DL $0.055 \times \frac{5.615}{2} = 0.154$

SD $0.029 \times 2.801 = 0.081$

LL $0.056 \times 2.801 = 0.157$

$\sum$ DL = 2590 in/in
SD = 1357 } 4014
LL = 2657 }

$b = 1.5 \times 54 + 6 = 87$ in

$= 9.615/2 \times 12 + b = 63.69 = 64$ in ΣQ = 476

N = 32 ΣQ = 378

$Y_1 = 3.45$ ΣQ = 329

a = 1.778 Y_2 = 4.626

Y_2 24.5 φM = 758 k I_{LB} = 2590

$\Delta_{DL} = 1.919$ c = 1.44 $< \frac{L}{360} = 1.8.0$.

$\Delta_L = 1.55$

$\Delta_{TL} = 3.469 - 1.75 = 1.719 < \frac{L}{240} = 2.7$.

OK

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JOB 7 WTC
SHEET NO. 1 318 OF
CALCULATED BY ICJC DATE
CHECKED BY DATE
SCALE

RESPONSE COMMENT #4

B7 @ line col (31)

DL = 0
SDL = 12 + 12 × 29/55 = 19 K
LL = 12 × 44/50 = 11 K

A > 600
LL = 55% × 79 = 44 PSF

(CONNECTION LOADS SHOWN ON PLAN ARE USE SAME LOADS AS BEAM 4A SEE SHT. MS-4.)

41.5'

0.385 DL
0.203 SD
0.308 LL

536
53'-78

$W_{DL} = 0.055 \times 7 = 0.385$ K/'
$W_{SDL} = 0.029 \times 7 = 0.203$
$W_{LL} = 0.044 \times 7 = 0.308$

DL = 10.2
SDL = 9.5
LL = 10.3

DL = 10.2
SDL = 20.3
LL = 15.99

$M^{33.4} = 126$
$M^{33.4} = 204$
$M^{33.4} = 173$
503 'K

$+M^{\mathbb{C}}_{DL} = 135$ $+M^{41.5}_{DL} = 92$ 'K
$+M^{\mathbb{C}}_{SD} = 181$ $+M^{41.5}_{SDL} = 220$ 'K
$+M_{LL} = 166$ $+M^{41.5}_{LL} = 164$
482 476

(WORKING LO)

$\Delta_{DL} = 2357$ IN/IN
$\Delta_{SDL} = 3385$
$\Delta_{LL} = 3013$ } 6398 IN/IN

TOTAL 1

$M_u = (204 + 126) \times 1.2 + 173 \times 1.6 = 673$ 'K < $\phi M_n = 758$ 'K

See B7
SHEET B-3 Area (1)
WITH NO COVER PLATE

EXIST BM W24×55 <32> [1½]

$\Delta_{DL} = \frac{2357}{1350} = 1.746$ c = 1.309 1½" PROVIDED OK

$I_{reqd}\Delta_{LL} = \frac{6398}{1.767} = 3621$ $\frac{L}{360} = 1.767$

$\frac{L}{240} = 2.65$

FOR Δ, Reqd Reinf.

b=61

$I_{Reqd} = 3630$ in⁴

PRODUCT 206-1 ACME Inc. Groton, Mass. 01471 To Order PHONE TOLL FREE 1-800-225-6700

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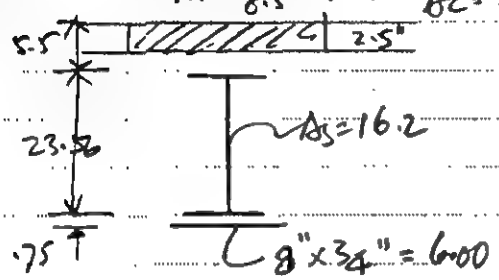
JOB 7 WTC
SHEET NO. A 19 OF
CALCULATED BY [illegible] DATE 9-30-88
CHECKED BY DATE
SCALE

B7 W24x55 <32> [1½]

$b = 61$

$b/n = \frac{61}{8.5} = 7.176$ $A_c = 17.94$



$I_s = \bar{y} = \frac{6.00 \times 0.375 + 16.2 \times 12.53}{6.00 + 16.2} = 9.245$

$I_s = 1350 + 6.00 \times (9.245 - .375)^2 + 16.2 \times (12.53 - 9.245)$
$= 1997 \text{ in}^4$

Composite $\bar{y}_b = \frac{17.94 \times 28.56 + 22.20 \times (9.245)}{17.94 + 22.20} = 17.556$

$I_{tr} = 17.94 \times (28.56 - 17.556)^2 + 22.95 \times (17.556 - 9.245)^2 + 1997$
$= 5755 \text{ in}^4$

$I_{eff} = 1997 + \sqrt{\frac{378}{454}}(5755 - 1997) = 5426 \text{ in}^4$

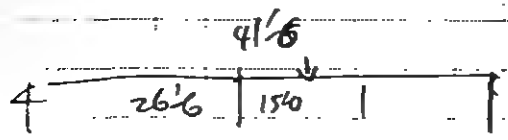
$\Delta_{DL} = \frac{2357}{1350} = 1.746$

$\Delta_{LL} = \frac{6398}{5426} = 1.179 < \frac{L}{360} = 1.767$

$\Delta_{TL} = 1.425 < \frac{L}{240} = 2.65$ OK

use ADD'L bott pl 8x¾ x 40'-0"

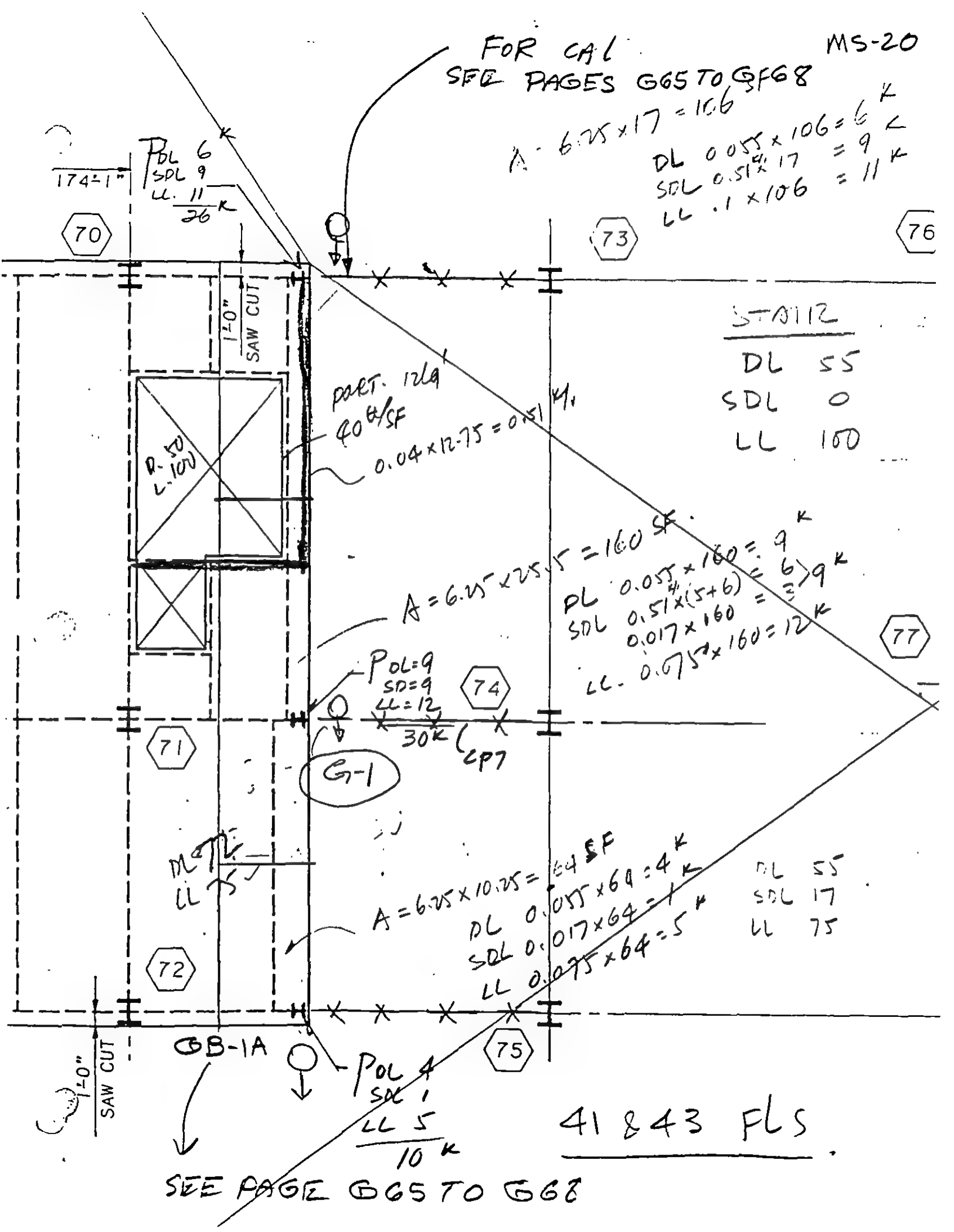
$(L = 53 \times .75 = 39.75)$



DESIGN OF weld.
As of pl = 8x¾ = 6
F = 6 x 50 = 300
$F = \frac{300}{2 \times 20} = 7.5$ OK
use min weld 3" @ 12

PRODUCT 205-1 ACME Inc., Groton, Mass. 01471 To Order PHONE TOLL FREE 1-800-225-6380

FOR CAL
SEE PAGES G65 TO G68



41 & 43 FLS

SEE PAGE G65 TO G68

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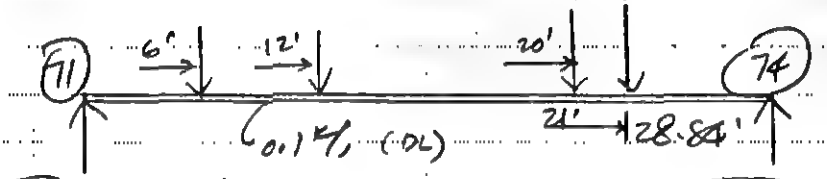
JOB 7 WTC
SHEET NO 3-21 OF
CALCULATED BY [illegible] DATE
CHECKED BY DATE
SCALE

38th, 40 & 42nd Pl.

EXIST. GB-1 W27x94

NEW DDBL

D = 12.7 28.6 + 18 = 46.6^k 15.3 9.9^k
L = 11.7 24.2 + 12 = 36.2 13.9 9.1



DL = 40.1^k
LL = 37.1

D.L. 41.29
L.L. 33.76

$+M^{12}_{DL} = 470^{'k}$
$+M^{12}_{LL} = 376$
$846^{'k} > M_{all} = 668^{'k}$ Reinf Reqd

$\Delta^{\ell}_{DL} = 2192$ IN/IN
$\Delta_{LL} = 1772 = 0.542$
$\Delta_{TL} = 3964 = 1.212$

$\frac{L}{360} = 0.96$
$\frac{L}{240} = 1.442$

$+M_{DL} = 470 \times 1.2 = 564^{'k}$
$+M_{LL} = 376 \times 1.6 = 602$
$1166^{'k} > \phi M_b = 1040^{'k}$ Reinf Reqd

40.1 × 1.2 = 48.12
37.1 × 1.6 = 59.36
107.48

41.29 × 1.2 = 49.548
37.76 × 1.6 = 60.416
109.964

THE OFFICE OF
IRWIN G. C[illegible]ITOR, P.C.
Consultir[illegible] [illegible]gineers
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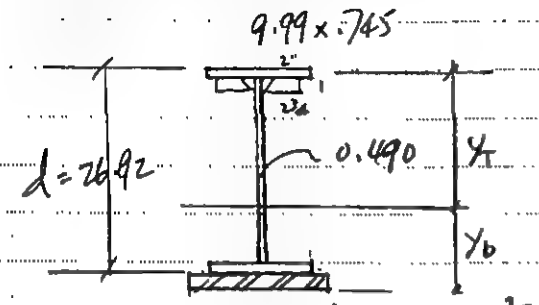
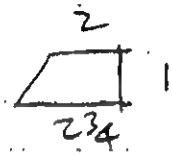
JOB 7WTC
SHEET NO. [illegible]-22 OF
CALCULATED BY [illegible] DATE 10-1-88
CHECKED BY DATE
SCALE

Rep[illegible] for GB-1 @ CORE.

CP7 11×½ × 16'0 bott
-2-2¾×1 Top ×16'0



W27×94
$A_s = 27.7$ $Z_x = 278$
$I_s = 3270$



$A_s = 2.375$
2.375
4.75

$11 \times \frac{1}{2} = 5.5 \text{ in}^2$

$2\bar{y} \times 0.49 = 5.5 - 4.75$

$\bar{y} = 0.765$

CP7

$y_b = \frac{26.92}{2} + .5 - 0.765 = 13.195$

$y_T = \frac{26.92}{2} + 0.765 = 14.225$

$Z_x = 9.99 \times .745 \times \left(14.225 - \frac{.745}{2}\right) + 9.99 \times .745 \times \left(13.195 - 0.5 - \frac{.745}{2}\right)$

$+ 5.5 \times (13.195 - 0.25) + 4.75 \times (14.225 - .745 - 0.5)$

$+ 0.49 \times (14.225 - .745)^2 \times \frac{1}{2} + 0.49\,(13.195 - 0.5 - .745)^2 \times \frac{1}{2}$

$= 103.098 + 91.711 + 71.198 + 61.655 + 44.519 + 34.987 = 407.068$

$\phi_b M_p = 0.9 \times 407.068 \times 50/12 = 1527^{'K} > 1166^{'K}$

cut off pt:

$1040 = 107.48 \times x - \frac{0.12}{2} \times (x^2)$ $1040 = 109.64 \times x - \frac{0.12}{2} x^2$

$0.06x^2 - 107.48x + 1040 = 0$ $0.06x^2 - 109.64x + 1040 =$

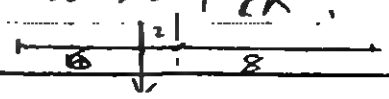
$x_L = 9.729'$ $x_R = 9.535$

$L = 28.84 - 9.729 - 9.535$

$= 9.576 + 2 = 11.576$ say 12'0 use 16'0.

$F = 5.5 \times 50 = 275$

$F = \frac{275}{2 \times 6'} = 22.9^K$ ¼" FW 3@8 $= 5.568 \times 3 \times \frac{12}{8} = 25^K > 22.9$ OK.



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JOB [illegible] #5
SHEET NO. TYP. FL. OF
CALCULATED BY [illegible] DATE DEC. 88
CHECKED BY DATE
SCALE PA Comment #5

COMPUTATION FLOOR DESIGN LOADS

FOR TOILET ROOM @ RAISE FLOOR.

AS PER N.Y.C. CODE RS-9-2

TOILET ROOM L.L = 40 PSF.

RAISE FLOOR SLAB 3" THK = 36

INSULATION = 15

91 PSF

< ALLOWABLE LL = 100 PSF

PA Comment # 6

TESTWELL CRAIG
LABORATORIES INCORPORATED

36-20 13th STREET, LONG ISLAND CITY, NEW YORK 11106
PHONE: (718) 392-0121, N.Y. TELEX: 287179TCNY, N.J. TELEX: 28720ZTCNJ

April 8, 1986
Lab No. BKO-1

Silverstein Development Corp.
521 Fifth Avenue
New York, NY 10175

Re: 7 World Trade Center
Ceiling Anchor Load Test

Gentlemen:

On April 3rd, a load test was conducted on 6 ceiling anchors installed the eighth floor of the above referenced project. In accordance with instructions of Tishman, a dead weight load of 250# was applied to eac anchor. Five 3/8" x 2¼" Red Head stud anchors were loaded to 250#, th of those were additionally loaded to 500#, and one received a dead loa of 500# plus a live load in excess of 200#. All five of the Red Head anchors took the load without pulling out or showing any clip lengthen

One Ladd - UTI shot pin anchor (Cal No. 48-69-SA) was tested with a 50 dead load and 200#+ live load. The anchor held the load without pulli out but the clip bent down causing a drop of approximately 3/4". The P. Authority and Tishman representatives present ended the test at this p

The test was witnessed by Robert Lachman, Charles Serge, Paul Cavanagh Alan Simmons, Vic Vaccariello, John Gargan, and Rene Benjamin of the P Authority. Also present were Tony Craig of Tishman and Dan Kennedy of Central Furring (Circle's sub-contractor).

Sincerely,

TESTWELL CRAIG LABORATORIES, INC.

David W. Lehmkuhl, P.E.
Director of Engineering

STATE OF NEW YORK
DAVID W. LEHMKUHL
No. 61978
LICENSED PROFESSIONAL ENGINEER

DWL/rs

cc: sdc 4, igc 1, tcc 1, pa 1, file 1, bill 1

5

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One New York Plaza
New York N Y 10004 (212) 747-7000

Salomon Brothers Inc

January 3, 1989

Mr. Luciano Sanchez
Port Authority of New York and New Jersey
One World Trade Center
62nd Floor East
New York, NY 10048

Re: 7 WTC - SBI Response to Port Authority Comments

Dear Lou:

Attached please find our response to the Port Authority comments received at our 12/12/88 meeting at the P.A. Copy of the P.A.'s comments (undated) is attached for reference.

Should you have any questions, please do not hesitate to call. Thank you.

Sincerely,

Manuel Fernandez

Manuel Fernandez
Vice President

Official Copy

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
JAN 05 1989 (6)
W-7004
ALTERATION APPLICATION

atts.

cc: M. Smith
J. Halpin
C. Chu
R. White/File (7-8800-02.000.10 Permit Filing Package #003)
E. Schneider

Atlanta/Boston/Chicago/Dallas/Frankfurt (Affiliate)/London (Affiliate)/Los Angeles/San Francisco/Tokyo (Affiliate)/Zurich

SOM

Ref. No. 6234-0015

December 21, 1988

RECEIVED
DEC 29 1988

Mr. Manuel Fernandez
Salomon Brothers Inc.
One New York Plaza
New York, New York 1004

Re: Port Authority comments on drawing/meeting held at Port Authority 12/12/88.

Dear Manuel:

Enclosed is "point by point" response to Port Authority memo undated discussed at a meeting with the Port Authority on December 12, 1988.

We have included the BSA Sheet for the "Cat Clip" mentioned in the Port memo along with structural calculations and a revised egress diagram for the 35th floor as discussed with you.

I believe this package answers all the questions raised at the 12/12/88 meeting.

Sincerely,

SKIDMORE, OWINGS & MERRILL

Warren Mathison

Warren Mathison
Associate Partner

Skidmore, Owings & Merrill

220 East 42nd Street New York, New York 10017
212 309-9500, Telex 620590

Point by point response to Port Authority of memo undated discussed at our meeting with the Port on December 12, 1988.

ARCHITECTURAL

Comment No. 1A. 35th floor occupancy is considered as "E" occupancy.

Comment No. 1B. We wish to make the occupancy load of the 35th floor 150 people which the stair capacity will handle. We have enclosed a revised egress analysis.

Comment No. 2. A copy of BSA or MEA resolutions will be submitted prior to installation.

Comment No. 3. "GAT clip 4B1-5L, Cat, #131-68-SM" Resolution attached.

STRUCTURAL

Comment No. 4. Calculation sheets for mezzanine hangers MS-1 thru MS-22 are enclosed herewith reflecting the reference to the hangers.

Post symbols have been revised to denote as hangers to match drawings S-14, S-16 and S-18. Hanger loads shown on drawings indicate the connection loads which have reserve capacity; this has been noted in enclosed computations.

Comment No. 5. Detail 4/A.200 shows 3 inch concrete for raised slab in toilet areas of trading floors. Trading floor is designed for 100 psf live load. The combined loading in raised slab areas is less than 100 psf; see enclosed computations. Any future raised slab areas if added at other locations will be checked as part of tenant work.

Comment No. 6. The ceiling system used presen
Center and tested in the presence of the Port A
is proposed to be used for new ceiling support.

Comment No. 7. Computations for all affected
with the December 19th, 1988 submission package

ELECTRICAL

8. Will comply.

9. Will comply.

10. ESA will comply with Article 27 of the City of New York Electrical Code pertaining to lighting pretection.

11. Will comply.

12. Will comply.

13. Will comply.

14. ESA will comply with City of New York Electrical Code Bulletin No. 126-Revised 1983 related to signal and communications cables.

15. Will comply.

16. ESA will comply with Article 770 and 800 of NEC related to Ul-Listing of fiber optic and communications cable.

17. Will comply.

18. Will comply.

19. Will comply.

20. Will comply.

21. Will comply

22. Power wiring may use PVC wiring in conduit per NYC and National Electrical Codes. ESA will comply with NEC and CNYEC Codes which state that CM communications cable can be used in nonplenum spaces.

23. Comment numbers 16 through 20 of the memorandum, A. Coras to R. Linn, dated 11/2/88:

    16. Weights of conduits and cables will be fowarded to structural consultant.

    17. a) 12-19 issue locates arch. items.
        b) Short circuit calculations will be submitted when design is finalized.

    18. Existing base building risers conform to NYCEC section 27-3174. New riser of tenant suplemental power will be submitted when loads are fully identified.

    19. Electrical room layout will be determined as part of tenant work.

    20. Exit signs and exit lighting will be part of tenant work.

HVAC

24. Refer to 12/19/88 and 12/20/88 issues of the HVAC drawings for additional information. Refer to 12/19/88 specifications for materials and methods of construction.

25. Will comply.

26. a. Will comply.

    b. Will comply.

    c. Will comply.

    d. Will comply.

    e. Will comply.

PLUMBING

27. New building service shall have a separate water meter and connect to base building service.

131-68-SM

MANUFACTURER'S NAME—Erico Products, Incorporated, owner.

REPRESENTED BY—Gene Carraro.

SUBJECT—To include channel clamp Models 4B1.5LS and 4B2LS.

APPEARANCES—

For Manufacturer: None.

ACTION OF BOARD—Application Reopened and resolution amended in accordance with the report and recommendation of Committee on Test.

THE VOTE TO GRANT—

Affirmative: Chairperson Deutsch, Vice Chairman Fossella, Commissioner Carroll, Commissioner Bockman, Commissioner Irwin and Commissioner Tamm 6

Negative: 0

THE RESOLUTION—

Whereas, the report of a Committee on Test reads:

131-68-SM: Amendment to the resolution to include Channel Clamp Models 4B1.5LS and 4B2LS.

Erico Products, Incorporated, Mountainside, New Jersey requests that the resolution adopted July 23, 1968 be reopened and amended to include Caddy Gat Channel Clamp-side mount type Models 4B1.5LS and 4B2LS.

PROPOSED USE—Clamp to attach Lathers Channel to ¼ inch Rod.

DESCRIPTION—There are two models of the Caddy Gat Channel Clamp. Model 4B2LS is designed for a 2" Lathers Channel and can support a 250 lb. load. Model 4B1.5LS is designed for 1½" Lathers Channel and can support a 200 lb. load. Both clamps are made of the same material with the same thickness and width except that a longer piece of metal is used to manufacture clamp 4B2LS which has a larger configuration.

The CADDY Gat Channel Clamp is a heat treated spring steel fastener 0.036 inches thick and 0.75 inches wide which provides a positive lock and is made to fit ¼ rod. The clamp is designed so that it can be placed on the rod through side openings. It is readily adjustable to provide proper leveling. When the lathers channel is snapped into the clamp, the channel is securely gripped to prevent movement of the channel on the rod.

INSPECTION AND TEST—The above clamps were tested by Pittsburgh Testing Laboratories file no. CLE-2234 P.O. #11066 dated May 14, 1986. The lowest ultimate failure load for the 4B2LS clamp was 1,000 lbs. and for the 4B1.5LS was 870 lbs.

RECOMMENDATION—The Committee on Test recommends that the resolution adopted July 23, 1968 be *reopened and amended* to include Caddy Gat Channel Clamps Models 4B1.5LS and 4B2LS *on condition* that the maximum load for the 4B1.5LS clamp does not exceed 200 lbs. and for the 4B2LS clamp does not exceed 250 lbs. and *on further condition* that all uses, locations and installations shall conform to Reference Standard RS-5 of the Building Code of the City of New York and the manufacturer's installations recommendations.

The descriptive information about this item, including brochures, catalogues, bulletins etc., as well as all product labels, packaging, and where possible, the item itself, shall be labeled with the wording: "Approved by the New York City Board of Standards and Appeals under Calendar Number 131-68-SM".

A sworn affidavit by a responsible officer of the manufacturer, familiar with the materials, processes and controls of the product manufactured, shall be filed annually with this Board, certifying that materials, processes, controls and labeling of materials, literature, catalogues, bulletins and packaging are being maintained as were in effect at the time of this approval under this Calendar Number. Failure to notify the Board of change of ownership, change of corporate name, change of address or to submit the annual affidavit will be cause for revocation of approval.

(Sgd.) KATHLEEN A. CARNEY,
Executive Director
For the Committee on Test
MARK JACHIEWICZ, P.E.
Committee on Test

Resolved, that the Board of Standards and Appeals does hereby *amend* the above cited *resolution* in accordance with the above report.

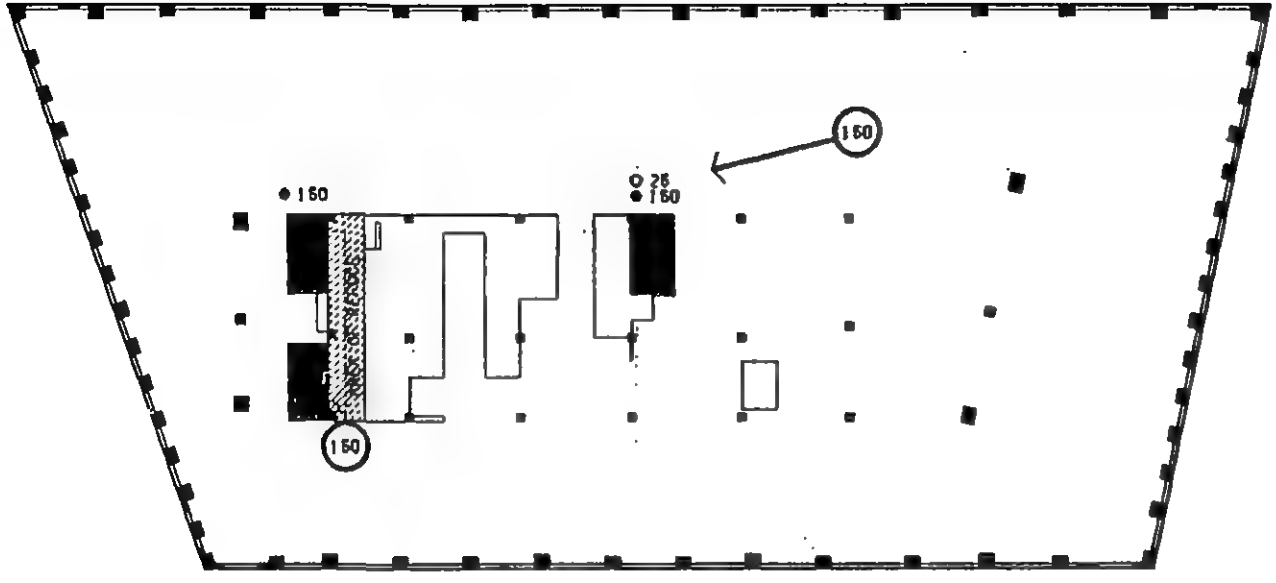
Adopted by Board of Standards and Appeals, October 28, 1986.

A true copy of resolution adopted by the Board of Standards and Appeals, October 28, 1986.
Printed in Bulletin No. 45, Vol. LXXI.

Sylvia Deutsch

Chairperson.

Copies Sent
To Applicant
Fire Com't.
Borough Supt.



SYMBOL KEY

(XX) OCCUPANT LOAD

XX LOAD ON EXIT ACCESS STAIR (PERSONS)

XX LOAD AT EXIT DOOR (PERSONS)

O XX TOTAL LOAD ON EXIT STAIR (PERSONS)

● XX CAPACITY OF EXIT STAIR (PERSONS)

SAFE AREA

OCCUPANCY LOAD BY DESIGN

TECHNOLOGY SUPPORT	150
SUPPLEMENTAL STAIR FROM ABOVE	150

EXIT CAPACITY

2 STAIRS + 2 1/2 UNITS (60 PERSONS/UNIT) = 300

35th FLOOR

PRELIMINARY REVISED 15 DEC 88

Salomon Brothers Inc
7 WORLD TRADE CENTER HEADQUARTERS

SOM SKIDMORE, OWINGS & MERRILL
ARCHITECTS / ENGINEERS

35TH FLOOR- EGRESS DIAGRAM

SK-1008

7

Rec'd @ Port Auth
12/12/88

RIDER

ALTERATION APPLICATION #W-7004

(Copy of our Memo #3&4).

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
JAN 05 1989
W-7004
ALTERATION APPLICATION

(6)

ARCHITECTURAL

1. Regarding response to comment #5(a) of Engineering/OAD Memorandum dated 11/2/88. 35th Floor, Occupancy and Egress.

   a) Except for spaces of a definitely different occupancy classification, the spaces on this floor shall be considered as E-occupancies in conformance with Code Table 3-2.

   b) In conformance with Code Section 27-358 (C26-601.2)(b) the indicated total floor occupant load of 25 persons shall be acceptable, provided this number will be posted at the floor and will not be increased in the course of an alteration of the floor and/or its use. Any change in the use of this floor resulting in an increase of the stated occupant load (of 25 persons) shall require a separate revised egress analysis.

2. BS&A or MEA resolutions of approval are required for fire rated parttions, door assemblies and other opening protectives; for raised floors, acoustical ceiling tiles, combustible insulation material, firestopping material and combustible interior finishes. A copy of such resolution of approval shall be submitted for reviev prior to the installatison of the materials. (Code Section 27-131 (C26-106.2)(a)). (Repeat comment)

3. Suspended Ceiling Specifications and Details. Verify that the submitted runner channel attachment identified as "Gat Clip 4B1.5L, CAT. #132-68-SM" has the load carrying capacity of "Gat Clip 4B1.5L, CAT, #131-68-SM", and submit a copy of the related BS&A resolution of approval.

STRUCTURAL

*4. Calculation sheets MS1 - MS22 are based on the mezzanines being posted from the floor below, whereas the drawings (S-14, S-16, and S-18) show the mezzanines hanging from the floor above. Also, the post loads used in the calculations are less than the hanger load specified on Dwg. No. S-14. Revise calculations and resubmit.

*5. Detail 4/A-200 shows additonal concrete for a raised slab. Clarify the location of this additional dead load and submit calculations for the affected beams.

*6. The Ladd shot pin shown in the ceilig details is not acceptable, sice it does not have BS&A approval, nor does it have Port Authority approved for use in 7 World Trade Center. The BS&A approval shown (No. 48-69-SA) applies only to the tool used to install the bolts. Please revise the detail and resubmit.

*7. The comment in the calculation book relating to the column design is noted. Approval cannot be recommended until these calculations are received.

ELECTRICAL

8. Code Anaylsis, Applicable Codes. Add the Electrical Code of the City of New York and the National Electrical Code to the list of applicable codes.

9. Code Analysis, Suspended Ceilings, Section 5 - Installation. Re: Code reference 5.3.2, RS 5-16, maximum Fixture Weights. Add a reuirement that fluorescent fixture installations be made in compliance with N.Y.C. Electrical Code Sections 27-3136 (B30-122.0)-q for recessed type and -r for surface or pendant type. Note that this necessitates supporting recessed fluorescent fixtures from the channel iron (Purlin) or the building structure if the fixture weight exceeds 40 pounds, and similarly supporting surface or pendant fluorescent fixtures regardless of fixture weight.

10. Code Analysis Electrical. Add the Code Article formerly numbered 28, "Radio Equipment," as it is pertinent to lighting protection for the microwave and satellite antennas.

11. Code Analysis Electrical. Re: Emergency Lighting, former Code Article 32. Add cross-references to N.Y.C. Building Code Sections 27-382 (C26-605.2), 27-384 (C26-606.2), and 27-396 (C26-610.1), and revise the reference given as C26-8101.18 to read, C26-801.18 (now Section 27-542).

12. Code Analysis, Electrical. Add the code article formerly numbered 33, "Circuits and Equipment Operating at more than 600 volts between conductors", as it is pertinent to the new work in the substation.

13. Code Analysis, Electrical. Add Bulletin 102-1967, "Rules and Regulations for Electric Services and Distribution Systems of over 250 volts and not more than 600 volts", as it is pertinent to the network compartments and distribution means.

14. Code Analysis, Electrical. Revise the reference given as Bulletin 126-1976 to read, Bulletin 126-Revised 1983, relating to wiring in ducts, plenums, and other air handling spaces, as the revision is pertinent to signal and communication cables.

15. Code Analysis, Electrical. Add National Electrical Code Article 110, "Requirements for Electrical Installation," which has particular application to short-circuit ratings, Sections 110-9 and 110-10, and to Electric Room working space and access, Sections 110-16 and 110-33.

16. Code Analysis, Electrical. Add National Electrical Code Articles 725, 760, 770, and 800, subject: Fire Resistance of Wires and Cables, pertaining to UL-listing requirements for low-voltage wires and cables.

17. Code Analysis, Electrical. Clarify that all requirements of the N.Y.C. Electrical Code, National Electrical Code, and N.Y.C. Building Code must be complield with, whether or not they are exemplified in the Code Analysis.

18. Code Analysis, Fire Alarm, re: Code Reference 1704.5(f). Add subpart (8), requiring smoke detectors at each elevator landing, and renumber references to (8) and (9) to read as (9) and (10). The references given in the Code Analysis are obsolete.

19. Code Analysis, Fire Alarm, re: Code Reference 1704.6(a). Revise height above floor for sending stations to be four 94) feet, per current Code, Section 27-973(a)(2).

20. Code Analysis, Fire Alarm. Add Code Section 27-971(g) (formerly under C26-1704.4) and Reference Standard RS 17-3A regarding Class E fire alarm signal systems.

21. Code Analysis, Fire Alarm. Add Code Section 27-969 (formerly C26-1704.2) regarding approvals and labelling requirements for fire alarm equipment.

22. Code Analysis. Add that the Port Authority prohibits the installation of PVC wiring and conduit.

*23. Comment Numbers 16 through 20 of the Memorandum, A. Coras to R. Linn, dated 11/2/88, remain outstanding.

HVAC

*24. Submitted Dwgs. HVAC-37, HVAC-38, HVAC-39, HVAC-42, HVAC-43 and HVAC-44 provide outline at the design work for the building's core but does not contain sufficient design information (dimensions, design details, materials, construction methods, etc.) based on which such work can be reviewed for conformance with the N.Y.C. Building Code. See Code Section 27-157 (C26-110.2).

25. Where sheet metal duct risers cross over to other shaft locations on the 37th and 42nd floors, they shall either be enclosed in 2-hour rated construction, the same as required for shaft enclosures, or fire dampers and access doors shall be installed at the penetrations of all floor slabs and shaft walls in conformance with Code Section 27-344 (C26-504.6)(c) and RS 13-1, Section 3-3. Indicate such details on the drawings.

26. Design Guidelines VIII, Minimum Standards for Construction in New York City, Engineering Requirement - HVAC:

    a) Add the requirements for Smoke Control in conformance with Code Section 27-777.1 (C26-1300.8).

    b) For "General Requirements and Construction Requirements of Fuel Oil Storage Tanks" add requirements of the New York State

Department of Environmental Conservation - GNYCRR: Part 612, Part 613 and part 614.

c) Revise NFPA 90-A, 1967 to NFPA 90-A, 1981.

d) Revise NFPA 96, 1964 to NFPA 96, 1984.

e) Revise ANSI-B9.1, 1971 to ANSI-B9.1, 1978.

PLUMBING

*27. The emergency make-up water line to the 46th floor S.B.1 tanks is not part of the base building scheme. A water meter shall be installed as per N.Y.C. Building Code Section P107.3.

120588

8

PA 2127
1-85

TENANT ALTERATION REVIEW REQUEST

CHECK APPLICABLE ROUTING	ROOM NO.
✓ Engineering (T.C.R.U.) 5I N	~~43E~~
Risk Management – JSTC – Zip 43	6 FL
Operations Standards – JSTC – Zip 75	5 FL
Terminal Properties Div.	56S
Control Desk	
Facility Manager –	
Port Dept. - Planning Div	64S
Aviation Technical Services Div.	65S
Air Terminal Properties Div.	
JFK – Business Administration – Zip 6	
NIA – Business Administration – Zip 19	
Marine Development & Rentals Div.	71E
Inspection & Safety	
Resident Engineer	

Description of Work:
Review Of Contract Docs
Revised as of
12/22/88

FACILITY 7 WTC
APPLICANT'S NAME SALOMON BR
APPLICATION NO. W-7004
DRAWING NO(S). SEE BELOW
DATE 12,23,88

☐ You are requested to review the attached application and forward your comments to:

☐ Attached are revised drawings. Please review only those items on which exception was previously taken and send your comments to:

829	71 S	L. Sanchez	466-8566
Org. Unit	Room No.	Contact	Ext.

No later than JAN 23, 1989

PROJECT ADMIN
Title

If no reply is received by above date, your concurrence will be assumed unless arrangements have been made for additional time for review.

FOR USE OF REVIEWING DEPARTMENT

COMMENTS: (Use reverse side if necessary) Indicate next to each comment whether it is a condition or recommendation.

Office Copy

D-5 Demolition Plan
D-26 " " 26TH FLR
D-31 " " 29, 30, 32, 33 RD flrs.
D-34 " " 34 TH FLR.
D-35 " " 35 TH "
D-37 " " 37TH & 36TH flrs
D-38 " " 38 TH - 40TH & 42 ND flrs.
D-39 " " 39 TH FLR.
D-41 " " 41 ST "
D-43 " " 43 RD "
D-44 " " 44 TH "
D-45 " " 45 TH "
D-46 " " 46 TH "
D-47 " " 47 TH "
S-3 5TH FLR. FRAMING PLAN
S-4 7TH - 29TH FLR. " "
S-5 30TH FLR FRAMING "
S-6 - 31 ST " " "
S-7 - 32 ND " " "

3

W-7004 (6)

SHEET 1 of 2

L. Sanchez / A. Cocas Memo to follow

(Please check applicable box)

☐ Approved ☐ Approved with Conditions and Recommendations Noted Above ☐ Disapproved with Requirements for Approval Noted Above ☐ Disapproved for Reasons Noted Above

Signature	Title	Date
		/ /

PA 2127
1-85

TENANT ALTERATION REVIEW REQUEST

CHECK APPLICABLE ROUTING	ROOM NO.
Engineering (T.C.R.U.)	43NE
Risk Management – JSTC – Zip 43	6 FL
Operations Standards – JSTC – Zip 75	5 FL
Terminal Properties Div.	56S
Control Desk	
Facility Manager –	
Port Dept. – Planning Div.	64S
Aviation Technical Services Div.	65S
Air Terminal Properties Div.	
JFK – Business Administration – Zip 6	
NIA – Business Administration – Zip 19	
Marine Development & Rentals Div.	71E
Inspection & Safety	
Resident Engineer	

Description of Work: Review

FACILITY

APPLICANT'S NAME

APPLICATION NO.

DRAWING NO(S)

DATE / /

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Org. Unit | Room No. | Contact | Ext.

No later than _____ Title _____

If no reply is received by above date, your concurrence will be assumed unless arrangements have been made for additional time for review.

FOR USE OF REVIEWING DEPARTMENT

COMMENTS: (Use reverse side if necessary) Indicate next to each comment whether it is a condition or recommendation.

S-8 – 33 RD FLR. FRAMING PLAN
S-9 – 34 TH " " "
S-10 – 35 TH " " "
S-11 – 36 TH " " "
S-12 – 37 TH " " "
S-13 – 38 TH " " "
S-14 – 39 TH " " "
S-15 – 40 TH " " "
S-16 – 41 ST " " "
S-17 – 42 ND " " "
S-18 – 43 RD " " "
S-19 – 44 TH " " "
S-20 – 45 TH " " "
S-21 – 46 TH " " "
S-22 – 47 TH " " "
S-33 – TYP. SUPERSTRUCTURE DTLS
D-1E – ELECTRICAL RISER
D-35E – 35 TH FLR ELEC. DEMO.

HVAC - 34, 35, 37, 38, 39, 42, 45, 46, 47

D-34H, 35-H, 37H, 38H, 46H, 47H

3 SETS OF STRUCTURAL CALCULATIONS

SHEET 2 OF 2

3

(Please check applicable box)

☐ Approved ☐ Approved with Conditions and Recommendations Noted Above ☐ Disapproved with Requirements for Approval Noted Above ☐ Disapproved for Reasons Noted Above

Signature | Title | Date

W-7004 (6)

THE PORT AUTHORITY OF NY & NJ Memorandum

TO: Arthur Coras, Manager, Quality Assurance Division
FROM: Luciano Sanchez
DATE: December 20, 1988
SUBJECT: THE WORLD TRADE CENTERS - SALOMON BROTHERS INC. - LEASE WTC-2305 - TCA #7004 - CONTRACT WTC-597.004 - REVIEW OF CONTRACT DRAWINGS - BASE BUILDING MODIFICATIONS

REF: Transmittal of drawings, dated December 19, 1988

COPY TO: Messrs. P. Cooper*, T. Donovan, R. Linn, P. Marchese, L. Menno, E. McNierney, A. Vaccaro*

You are requested to review the drawings per attached lists and specifications for New York City Building Code compliance, construction details and specifications, as they apply to Seven World Trade Center.

This work will be performed under a Tenant Construction Application and consist of Structural, Mechanical, Electrical, Plumbing, Fire Protection and Vertical Transportation Modifications to the subject premises. The estimate cost for this work is not available at the present time.

In addition, all persons copied with attachments of this memorandum are also requested to submit their comments by January 19, 1989.

Should you have any question on this matter please contact me on 466-8566 or Mr. E. McNierney on 313-2257.

Luciano Sanchez
WTC Planning Division

EMcN/sm
* (w/att.)

THE PORT AUTHORITY OF N.Y. & N.J.
ENGINEERING DEPT., QUALITY ASSURANCE DIV
TENANT CONSTRUCTION REVIEW UNIT

DEC 21 1988

RECEIVED
NOTED: PSC 4 Jan 89
REFERRED TO: J.J. Foldman

THE PORT AUTHORITY OF NY & NJ

Memorandum

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Luciano Sanchez
WTC Planning Division

EMcN/sm
* (w/att.)

Luciano to Sign

Office Copy

PORT AUTHORITY OF N.Y. & N.J.
ENG. DEPT., QUALITY ASSURANCE DIV.
DESIGN STANDARDS
W-7004-6
JAN 03 1989
RECEIVED
ALTERATIONS APPLICATION
TENANT CONSTRUCTION REVIEW UNIT

9

TRANSMITTAL

SKIDMORE OWINGS & MERRILL

TO	RE
THE PORT AUTHORITY OF N.Y. & N.J. ONE WORLD TRADE CENTER NEW YORK, N.Y. 10048 ATTN: Mr. L. Sanchez	**Salomon Brothers Inc** 7 WORLD TRADE CENTER NEW YORK, NEW YORK 10048

WE ARE SENDING HEREWITH THE FOLLOWING

X DRAWINGS X SPECIFICATIONS SHOP DRAWINGS SAMPLES

QUANTITY & TYPE	DESCRIPTION	DATE
1.	6 Sets B/W (Drawing List Attached)	
2.	6 Sets Specification Sections (See Table of Content Attached)	
3.	6 Sets of Structural Calculations (Books: 1, 2 & 3)	
4.	6 Sets of Design Guideline Specifications: Voice & Data Cable Specification	
5.	6 Sets of Design Guideline Specifications: Voice & Data Communications	
	Outline Specifications	

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WTC PLANNING
1 WK-RM62E

THE PORT AUTHORITY OF N.Y. & N.J.
RECEIVED
JAN 03 1989
W-7064 (6)
ALTERATION APPLICATION

BY	DATE
D. Montgomery	19 December 1988
☐ RECEIPT AND RETURN TO SOM REQUESTED	X

MORSE DIESEL-K. SKILLINGS: 1 SET B&W, 1 SET SEPIAS, 1 PHOTOCOPY
FLACK & KRUTZ-J. BEECH: 3 SETS B&W (1/2 SIZE), 3 PHOTOCOPIES
SILVERSTEIN PROP.-M. SMITH: 3 SETS B&W, 3 PHOTOCOPIES
S & H-B. WOLLISON: 3 AETS B&W (1/2 SIZE), 3 PHOTOCOPIES
IRWIN CANTOR-A. TAMBOLE: 1 SET B&W, 1 PHOTOCOPY
E.S.A.-R. SUMSKI: 1SET B&W, 1 PHOTOCOPY
S.B.I.-M. FERNANDEZ: 1 SET B&W, 2 PHOTOCOPIES

J. STUDLEY-D. SCHANABEL: 1 SET B&W, 1 PHOTOCOPY
C. MURPHY-1 SET B&W (1/2 SIZE), 1 PHOTOCOPY
D. SULLIVAN-1SET B&W (1/2 SIZE), 1 PHOTOCOPY
B. ARMSTRONG-1 SET B&W (1/2 SIZE), 1 PHOTOCOPY
W. MATHISON
CF: 6234-135

P.T.C.I. - M. SIMONE: 2 SETS B&W, 2 PHOTOCOPIES

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DEC 2 0 1988

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1 WK RM62E

Base Building Modification
Drawing List

Note: All Drawings Dated
19 Dec. 1988

ARCHITECTURAL

A-1	1st Floor Plan
A-2	2nd Floor Plan
A-3	3rd Floor Plan
A-4	4th Floor Plan
A-5	5th Floor Plan
A-48	Main Roof & Bulkhead
A-200	Miscellaneous Base Building Modification Det
A-201	Miscellaneous Base Building Modification Det
A-218	Toilet Room Plans Details
A-251	Stair Details
A-256	Partition Details
A-262	Roof Bulkhead Elevations Details
A-263	Roof Bulkhead Details
A-353	Toilet Room Reflected Ceiling Plans
D-1	1st Floor Demolition Plan
D-3	3rd Floor Demolition Plan
D-4	4th Floor Demolition Plan
D-5	5th Floor Demolition Plan
D-6	6th Floor Demolition Plan
D-48	Roof Demolition Plan

Structural

S-1	3rd Floor Framing Plan
S-2	4th Floor Framing Plan
S-3	5th Floor Framing Plan
S-21	46th Floor Framing Plan
S-23	Roof Framing Plan
S-24	Bulkhead Framing Plan
S-26	Column Schedule 1
S-27	Column Schedule 2
S-28	Column Schedule 3
S-29	Column Schedule 4
S-30	Column Schedule 5
S-31	Column Schedule 6
S-32	Typ. Superstructure Details & General Notes
S-33	Typ. Superstructure Details
S-34	Superstructure Section #1
S-35	Superstructure Section #2

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DEC 20 1988
WTC PLANNING
1 WK-RM62E

Base Building Modification
Drawing List Cont'd

Note: All Drawings Date 19 Dec. 1988

PLUMBING

P-1	1st Floor Plan
P-2	2nd Floor Plan
P-3	3rd Floor Plan
P-4	4th Floor Plan
P-5	5th Floor Plan
P-48	Main Roof Plan

HVAC

HVAC-R1	Piping Riser Diagram
HVAC-1	1st Floor Plan
HVAC-2	2nd Floor Plan
HVAC-3	3rd Floor Plan
HVAC-4	4th Floor Plan
HVAC-5	5th Floor Plan
HVAC-6	6th Floor Plan
HVAC-48	Main Roof Plan

ELECTRICAL

E-5	5th Floor Electrical Plan
E-35	35th Floor Electrical Plan
E-44	44th Floor Electrical Plan
E-48	Roof Electrical Plan
D-1E	Electrical Riser
E-R1	Standby Power and UPS Riser
E-R2	One Line Diagram - Service Entrance

ELEVATOR & ESCALATOR

ELV-2	Escalator Plan, Section, & Details. Elevator HE 32 General Notes, Plans & Sections
ELV-3	Elevator PE 1 & 2 General Notes, Plans & Sections

COMMUNICATIONS

C-1.1	1st Floor Base Building Communications Floor Plan
C-48.1	Main Roof Base Building Communications Floor Plan
CSK-4	Shaft Barrier Detail

salomon\tc

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* Denotes Section Issued Herewith.

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*	Section 01300	Submittals	8	December 19, 1988
*	Section 01600	Material and Equipment	3	December 19, 1988
*	Section 01700	Contract Closeout	3	December 19, 1988
*	Section 01800	Alterations	3	December 19, 1988
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	NOT USED			
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	Section 05100	Structural Steel (Prepared by The Office of Irwin Cantor)	21	November 7, 1988

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*	Section 14211 Traction Elevators (prepared by John A. Van Deusen & Associates)	34	December 19, 1988
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	DIVISION 15 - MECHANICAL		
*	Outline Specifications - Heating, Ventilating and Air Conditioning - Electrical - Plumbing - Fire Protection	28	December 16, 1988
*	Section 15030 Prepurchase Specifications for Cooling Towers (Induced Draft) (Prepared by Flack & Kurtz Consulting Engineers)	8	December 13, 1988
*	Section 15031 Prepurchase Specifications for Electrical Centrifugal Refrigeration Machines (Prepared by Flack & Kurtz Consulting Engineers)	15	December 13, 1988

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WTC PLANNING
1 WK-RM32E

DIVISION 16 - ELECTRICAL

*	Section PP-16200	Prepurchase Specifications for Standby Power System (Prepared by Flack & Kurtz Consulting Engineers)	63	November 21, 1988
*		Addendum No. 1 (Prepared by Flack & Kurtz Consulting Engineers)	2	December 19, 1988

* * *

RECEIVED
DEC 20 1988
WR-RM62E

10

TRANSMITTAL

SKIDMORE, OWINGS & MERRILL

220 EAST 42ND STREET · NEW YORK, NEW YORK 10017

TO:	RE:
THE PORT AUTHORITY OF N.Y. & N.J. ONE WORLD TRADE CENTER NEW YORK, N.Y. 10048 ATTN: Mr. L. Sanchez	SALOMON BROTHER INC. 7 WORLD TRADE CENTER NEW YORK, NEW YORK 10048

WE ARE SENDING HEREWITH THE FOLLOWING:

[X] DRAWINGS [ ] SPECIFICATIONS [ ] SHOP DRAWINGS [ ] SAMPLES [ ]

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PORT AUTHORITY OF N.Y. & N.J.
CONSTRUCTION REVIEW UNIT
RECEIVED
JAN 03 1989
W-7004 (6)
ALTERATION APPL.

office copy

BY: D. Montgomery	DATE: 22 December 1988
[ ] RECEIPT AND RETURN TO SOM REQUESTED	X

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Photocopies Include:

- Structural Calculations
- Transmittals with Drawing List

BASE BUILDING MODIFICATION NOTE:
REVISED DEMOLITION DRAWINGS

Note: All Drawings Dated
22 December 1988

ARCHITECTURAL

D-5	5th Floor Demolition Plan	
D-26	26th Floor Demolition Plan	(Sim. for Non-SBI floors)
D-31	31st Floor Demolition Plan	(29th, 30th, 32nd & 33rd fl. sim.)
D-34	34th Floor Demolition Plan	
D-35	35th Floor Demolition Plan	
D-37	37th Floor Demolition Plan	(36th floor similar)
D-38	38th Floor Demolition Plan	(40th & 42nd floor similar)
D-39	39th Floor Demolition Plan	
D-41	41st Floor Demolition Plan	
D-43	43rd Floor Demolition Plan	
D-44	44th Floor Demolition Plan	
D-45	45th Floor Demolition Plan	
D-46	46th Floor Demolition Plan	
D-47	47th Floor Demolition Plan	

STRUCTURAL

S-3	5th Floor Framing Plan
S-4	7th-29th Floor Framing Plan
S-5	30th Floor Framing Plan
S-6	31st Floor Framing Plan
S-7	32nd Floor Framing Plan
S-8	33rd Floor Framing Plan
S-9	34th Floor Framing Plan
S-10	35th Floor Framing Plan
S-11	36th Floor Framing Plan
S-12	37th Floor Framing Plan
S-13	38th Floor Framing Plan
S-14	39th Floor Framing Plan
S-15	40th Floor Framing Plan
S-16	41st Floor Framing Plan
S-17	42nd Floor Framing Plan
S-18	43rd Floor Framing Plan
S-19	44th Floor Framing Plan
S-20	45th Floor Framing Plan
S-21	46th Floor Framing Plan
S-22	47th Floor Framing Plan
S-33	Typical Superstructure Details

BASE BUILDING MODIFIC. ION NOTE: Note. All Drawings Dated
REVISED DEMOLITION DRAWINGS CONT'D 22 December 1988

ELECTRICAL

D-1E	Electrical Riser
D-35	35th Floor Electrical Demolition Plan

HVAC

HVAC-34	34th Floor Plan (typ. for 30th - 34th fl.)
HVAC-35	35th Floor Plan
HVAC-37	37th Floor Plan (typ. for 36th Floor)
HVAC-38	38th Floor Plan
HVAC-39	39th Floor Plan
HVAC-42	42nd Floor Plan
HVAC-43	43rd Floor Plan (typ. for 41st floor)
HVAC-44	44th Floor Plan
HVAC-45	45th Floor Plan
HVAC-46	46th Floor Plan
HVAC-47	47th Floor Plan

D-34H	34th Floor Plan Demolition Plan
D-35H	35th Floor Plan Demolition Plan
D-37H	37th Floor Plan Demolition Plan (36th fl. sim.)
D-38H	38th Floor Plan Demolition Plan (39th - 44th fl. sim.)
D-45H	45th Floor Plan Demolition Plan
D-46H	46th Floor Plan Demolition Plan
D-47H	47th Floor Plan Demolition Plan

BASE BUILDING MODIFICATION NOTE:
REVISED DEMOLITION DRAWINGS CONT'D

Note: All Drawings Dated
22 December 1988

ELECTRICAL

D-1E	Eletrical Riser
D-35	35th Floor Electrical Demolition Plan

HVAC

HVAC-34	34th Floor Plan (typ. for 30th - 34th fl.)
HVAC-35	35th Floor Plan
HVAC-37	37th Floor Plan (typ. for 36th Floor)
HVAC-38	38th Floor Plan
HVAC-39	39th Floor Plan
HVAC-42	42nd Floor Plan
HVAC-43	43rd Floor Plan (typ. for 41st floor)
HVAC-44	44th Floor Plan
HVAC-45	45th Floor Plan
HVAC-46	46th Floor Plan
HVAC-47	47th Floor Plan

D-34H	34th Floor Plan Demolition Plan
D-35H	35th Floor Plan Demolition Plan
D-37H	37th Floor Plan Demolition Plan (36th fl. sim.)
D-38H	38th Floor Plan Demolition Plan (39th - 44th fl. sim.)
D-45H	45th Floor Plan Demolition Plan
D-46H	46th Floor Plan Demolition Plan
D-47H	47th Floor Plan Demolition Plan

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THE PORT AUTHORITY OF NEW YORK & NEW JERSEY

M E M O R A N D U M

To: Mr. R. Linn, Deputy Director for Physical Facilities, WT&ED
From: Arthur P. Coras
Date: December 20, 1988
Subject: WTC - ALTERATION APPLICATION #W-7004 - SALOMON BROTHERS - 7 WTC - BASE BUILDING MODIFICATIONS

Reference: Memo, Sanchez/Coras, dated November 22, 1988

Copy To: L. Sanchez A. Vaccaro Job Folder
Chrono Folder

A review of the material submitted with the referenced request for the subject application has been made.

It is recommended that approval to proceed be withheld pending submission of the items indicated below being revised in accordance with the twenty-four (24) requirements listed on the attached rider.

REMARKS: 1. This contract document submission falls far short of completing the administrative details we had agreed upon at the project's start, and also discussed with the consultants at two job meetings. There has been no correspondence describing the submissions' scope-of-work, the purpose of the submissions, which documents are for information only (not requiring review), and no written response to outstanding comments. As a result, TCRU/Design Standards time has been unnecessarily used in reviewing incomplete contract drawings, especially in the Architectural, HVAC, and Electrical disciplines.

In order to continue to meet the review turnaround goals, please have the project consultants fulfill their end of our procedural agreement.

2. When the proposed schedule of submissions for the base building work was reviewed, it was noted that several of the dates fell in the mid-point of ongoing reviews, and that such overlapping may eventually result in review delays and/or lateness. Despite assurance that every attempt would be made to avoid such a situation, it did occur with the submission covered in this memo; it was received by TCRU while the previous submission was being reviewed.

   Although once again, the deadline was met, the overlap of submissions drastically reduced the current review period, and precluded the possibility of any communciations with the consultants; communications which might have clarified several of the comments and thereby voiding them.

Arthur P. Coras, P.E.
Manager
Quality Assurance Division

JPV/dm
att.

12

RIDER

ALTERATION APPLICATION #V-7004

ARCHITECTURAL

*1. Floor Plans. Provide the following information where missing:

a) Identify all spaces and their occupancy classification. (N.Y.C. Building Code Table 3-2).

b) At assembly spaces establish occupant load, size of floor area and net floor per occupant. Also show seating arrangements and traffic aisles. (Code Section 27-358 (C26-601.2)).

c) Identify all stairs by a reference number and explain large shaded areas to enable review. (Code Section 27-157 (C26-110.2)).

*2. Floor Plans. At floors with assembly spaces, provide an egress analysis substantiating compliance with the applicable requirements of Building Code Subchapter 8 regarding exits, exit travel, safe areas, etc. Verify the code compliance of exits from assembly spaces and omit doors from spaces permitted at safe areas such as those from MER's. Refer to Code Sections 27-534 (C26-801.10)(f) and 27-535 (C26-801.11).

*3. Dwg. #A-39, 39th Floor Plan:

a) Clarify if the auditorium discharges to a safe area, in which case the extent of same and its conformance with the requirements of Code Section 27-534 (C26-801.10)(d)3 shall be established.

b) Separation between the 39th Floor and the two-story section of the 38th Floor has been partially omitted along the edges of the large floor opening. Please clarify.

c) Verify that the clear width of the narrow exit passageways north and south of the men's Toilet Room, leading to the center stair, complies with the requirements of Code Table 6-1. Revise the plan if and as required.

4. Dwg. #A-39, Floor Plan, Auditorium:

a) Resolve the conflict between doors obstructing each other as a result of their locations and swings.

b) Regarding a direct exit into the adjoining stair as shown, note that this appears to be non-conforming because of the steps at the auditorium side and by the difference in floor levels (27-371 (C26-604.4)(h)).

*5. Dwg. #A-45, 45th Floor Plan. Provide more detailed information regarding the occupancies and inter-relationship of the different spaces, the egress from the floor, and the function of the new supplemental stair adjacent to the kitchen. (27-157 (C26-110.2)).

6. Dwg. #A-45, 45th Floor Plan. At this and at other floors verify if the length of elevator lobbies accessible from one side only exceeds 50 feet, in which case justification is required for exceeding the limitation of dead end travel established by Code Table 6-1.

7. Dwgs. #A-46 and A-47, 46th and 47th Floor Plan. At the corridor leading to the center stair indicate its width at projecting columns. (27-369 (C26-604.2)(a)). Also show travel distances to both stairs.

8. Dwg. #A-46, 46th Floor Plan. Wherever an elevator lobby is to be separated by doors or other means from the general floor area, as indicated at this floor, provisions shall be made for emergency egress from such lobby.

*9. Dwg. #A-46. Clarify function of the space north of the core area and access thereto.

10. Dwg. #A-250, Stair Details #5 and 6. Decrease the indicated 10-1/2" width of the new top tread to match the 9-1/2" width of the existing treads. (27-375 (C26-604.8)(d)(2)). Extend the center railing return beyond the nosing of the top tread; see Detail #1. (Repeat comment)

11. Dwg. #A-47, 47th Floor Plan:

a) At the west side MER the building exit stair shall not be used for access. Show an independent access. See Code Section 27-375 (C26-604.8)j.

b) Doors opening into the central stair shall swing in the direction of egress. 27-371 (C26-604.)g.

*12. Dwg. #A-47, 47th Floor Plan. The concealment of the west stair beyond three (3) multileveled mechanical spaces violates the code requirement for two (2) stairs along an unobstructed path. (27-366 (C26-603.2)) Please re-analize.

13. Dwg. #A-47. Clarify if there is access to spaces now shown without any.

14. Dwg. #A-251, Stair Sections and Details. Provide complete information regarding the construction and support of the stairs, their coordination with related floor assemblies, partitions, and suspended ceilings. Clarify the separation of the stairs from occupied spaces below.

Also provide plans of the stair and related floor areas at the lower level. (27-157 (C26-110.2)).

STRUCTURAL

*15. When an existing column is strengthened the stress in the column, due to loads that cannot be removed, remains unchanged by the reinforcement. The final stress in the original column is equal to this residual stress plus the stress from subsequent loads applied to the reinforced section. The submitted calculations do not examine this condition. Please revise and resubmit.

*16. The investigation of the double-length columns shall consider the effects of the change in cross-section at mid-height, and the strength of the splice.

*17. The structural comments of the memo, A. Coras to R. Linn, dated 12/15/88 are outstanding.

ELECTRICAL

*18. Comment numbers 16 through 20 of the Memorandum, A. Coras to R. Linn, dated 11/2/88, and comment numbers 8 through 22 of the Memorandum, A. Coras to R. Linn, dated 12/5/88, remain outstanding.

*19. Communications drawings ("C" series). Affix PE or RA seal and signature. N.Y.C. Building Code Section 27-157 (C26-110.2).

MECHANICAL

20. Comment numbers 21 and 22 of the Memorandum A. Coras to R. Linn, dated 11/2/88, and comment numbers 24, 25 and 26 of the Memorandum A. Coras to R. Linn, dated 12/5/88, remain outstanding.

*21 Submitted drawings #HVAC-45, HVAC-46 and HVAC-47 provide only an outline of the design work for the building's core but do not contain sufficient design information (dimensions, design details, materials, construction methods, etc.) based on which such work can be reviewed for conformance with the N.Y.C. Building Code. See Code Section 27-157 (C26-110.2).

22. Dwg. #HVAC-45. Where the 44 x 24 toilet exhaust duct crosses over to another shaft location it shall either be enclosed in 2-hour rated construction (same as required for shaft enclosures), or fire dampers and access doors shall be installed in the duct at penetrations of fire rated partitions (See Dwg. #A-45), floor slabs, and/or shaft walls in conformance with N.Y.C. Building Code, Section 27-344 (C26-504.6).(c) and RS 13-1, Section 3-3.

23. Dwg. #HVAC-47. Provide part plans, sections and/or elevations as required to clarify the location, connection points and coordination with O.A. ducts for the MER 64 x 48 smoke exhaust system duct section. See Code Section 27-157 (C26-110.2). Also provide in this duct the code required opening protectives at penetrations of all rated partitions in conformance with RS 13-1, Section 3-3.

PLUMBING

24. The emergency make-up water line to the 46th floor S.B.I. tanks is not part of the base building scheme. A water meter shall be installed as per N.Y.C. Building Code Section P107.3. (Repeat comment)

122088

M E M O R A N D U M

To: Mr. R. Linn, Deputy Director for Physical Facilities, WT&ED
From: Arthur P. Coras
Date: December 5, 1988
Subject: WTC - ALTERATION APPLICATION #W-7004 - SALOMON BROTHERS - 7 WTC - BASE BUILDING MODIFICATIONS

Reference: 1. Review Request dated 11/9/88
2. Memo, Sanchez/Coras, dated November 10, 1988
3. Buckslip L. Sanchez to P. Cooper dated 11/15/88

Copy To: L. Sanchez A. Vaccaro Job Folder
Chrono Folder

A review of the material submitted with the referenced request for the subject application has been made.

It is recommended that approval to proceed be withheld pending submission of the items indicated below being revised in accordance with the twenty-seven (27) requirements listed on the attached rider.

REMARKS: The comments contained in the rider to this memo were discussed in a meeting between TCRU/Design standards and WT/ED prior to the memo's issuance. It was agreed that the Architectural, Electrical, HVAC, and plumbing comments would be responded to as part of a future, initial, major submission. However the structural comments would require a re-submission of the pertinent drawings and calculations.

Arthur P. Coras, P.E.
Manager
Quality Assurance Division

JPV/dm
att.

RIDER

ALTERATION APPLICATION #W-7004

ARCHITECTURAL

1. Regarding response to comment #5(a) of Engineering/QAD Memorandum dated 11/2/88, 35th Floor, Occupancy and Egress:

   a) Except for spaces of a definitely different occupancy classification, the spaces on this floor shall be considered as E-occupancies in conformance with Code Table 3-2.

   b) In conformance with Code Section 27-358 (C26-601.2)(b), the indicated total floor occupant load of 25 persons shall be acceptable, provided that this number will be posted at the floor and will not be increased in the course of an alteration of the floor and/or its use. Any change in the use of this floor resulting in an increase of the stated occupant load (of 25 persons) shall require a separate revised egress analysis.

2. BS&A or MEA resolutions of approval are required for fire rated partitions, door assemblies and other opening protectives, for raised floors, acoustical ceiling tiles, combustible insulation material, firestopping material, and combustible interior finishes. A copy of such resolution of approval shall be submitted for review prior to the installation of the materials. (Code Section 27-131 (C26-106.2)(a)). (Repeat comment)

3. Suspended Ceiling Specifications and Details. Verify that the submitted runner channel attachment identified as "Gat Clip 4B1.5L, CAT. #132-68-SM" has the load carrying capacity of "Gat Clip 4B1.5L, CAT, #131-68-SM", and submit a copy of the related BS&A resolution of approval.

STRUCTURAL

*4. Calculation sheets MS1 - MS22 are based on the mezzanines being posted from the floor below, whereas the drawings (S-14, S-16, and S-18) show the mezzanines hanging from the floor above. Also, the post loads used in the calculations are less than the hanger load specified on Dwg. No. S-14. Revise calculations and resubmit.

*5. Detail 4/A-200 shows additional concrete for a raised slab. Clarify the location of this additional dead load and submit calculations for the affected beams.

*6. The Ladd shot pin shown in the ceiling details is not acceptable since it does not have BS&A approval, nor does it have Port Authority approval for use in 7 World Trade Center. The BS&A approval shown (No. 48-69-SA) applies only to the tool used to install the bolts. Please revise the detail and resubmit.

Revised #5 also

*7. The comment in the calculation book relating to the column design is noted. Approval cannot be recommended until these calculations are received.

ELECTRICAL

8. Code Analysis, Applicable Codes. Add the Electrical Code of the City of New York and the National Electrical Code to the list of applicable codes.

9. Code Analysis, Suspended Ceilings, Section 5 - Installation. Re: Code reference 5.3.2, RS 5-16, maximum Fixture Weights. Add a requirement that fluorescent fixture installations be made in compliance with N.Y.C. Electrical Code Sections 27-3136 (B30-122.0)-q for recessed type, and -r for surface or pendant type. Note that this necessitates supporting recessed fluorescent fixtures from the channel iron (purlin) or the building structure if the fixture weight exceeds 40 pounds, and similarly for the supporting surface or pendant fluorescent fixtures regardless of fixture weight.

10. Code Analysis Electrical. Add the Code Article formerly numbered 28, "Radio Equipment," as it is pertinent to lighting protection for the microwave and satellite antennas.

11. Code Analysis Electrical. Re: Emergency Lighting, former Code Article 32. Add cross-references to N.Y.C. Building Code Sections 27-382 (C26-605.2), 27-384 (C26-606.2), and 27-396 (C26-610.1), and revise the reference given as C26-8101.18 to read, C26-801.18 (now Section 27-542).

12. Code Analysis, Electrical. Add the code article formerly numbered 33, "Circuits and Equipment Operating at more than 600 volts between conductors", as it is pertinent to the new work in the substation.

13. Code Analysis, Electrical. Add Bulletin 102-1967, "Rules and Regulations for Electric Services and Distribution Systems of over 250 volts and not more than 600 volts", as it is pertinent to the network compartments and distribution means.

14. Code Analysis, Electrical. Revise the reference given as Bulletin 126-1976 to read, Bulletin 126-Revised 1983, relating to wiring in ducts, plenums, and other air handling spaces, as the revision is pertinent to signal and communication cables.

15. Code Analysis, Electrical. Add National Electrical Code Article 110, "Requirements for Electrical Installation," which has particular application to short-circuit ratings, Sections 110-9 and 110-10, and to Electric Room working space and access, Sections 110-16 and 110-33.

16. Code Analysis, Electrical. Add National Electrical Code Articles 725, 760, 770, and 800, subject: Fire Resistance of Wires and Cables, pertaining to UL-listing requirements for low-voltage wires and cables.

17. Code Analysis, Electrical. Clarify that all requirements of the N.Y.C. Electrical Code, National Electrical Code, and N.Y.C. Building Code must be complied with, whether or not they are exemplified in the Code Analysis.

18. Code Analysis, Fire Alarm, re: Code Reference 1704.5(f). Add subpart (8), requiring smoke detectors at each elevator landing, and renumber references (8) and (9) to read as (9) and (10). The references given in the Code Analysis are obsolete.

19. Code Analysis, Fire Alarm, re: Code Reference 1704.6(a). Revise height above floor for sending stations to be four (4) feet, per current Code, Section 27-973(a)(2).

20. Code Analysis Fire Alarm. Add Code Section 27-971(g) (formerly under C26-1704.4) and Reference Standard RS 17-3A regarding Class E fire alarm signal systems.

21. Code Analysis, Fire Alarm. Add Code Section 27-969 (formerly C26-1704.2) regarding approvals and labeling requirements for fire alarm equipment.

22. Code Analysis. Add that the Port Authority prohibits the installation of PVC conduit and insulated wiring in the building's interior.

*23. Comment Numbers 16 through 20 of the Memorandum, A. Coras to R. Linn, dated 11/2/88, remain outstanding.

HVAC

*24. Submitted Dwgs. #HVAC-37, HVAC-38, HVAC-39, HVAC-42, HVAC-43 and HVAC-44 provide outline of the design work for the building's core but does not contain sufficient design information (dimensions, design details, materials, construction methods, etc.) based on which such work can be reviewed for conformance with the N.Y.C. Building Code. See Code Section 27-157 (C26-110.2).

25. Where sheet metal duct risers cross over to other shaft locations on the 37th and 42nd floors, they shall either be enclosed in 2-hour rated construction, the same as required for shaft enclosures, or fire dampers and access doors shall be installed at the penetrations of all floor slabs and shaft walls in conformance with Code Section 27-344 (C26-504.6)(c) and RS 13-1, Section 3-3. Indicate such details on the drawings.

26. Design Guidelines VIII, Minimum Standards for Construction in New York City, Engineering Requirements - HVAC:

a) Add the requirements for Smoke Control in conformance with Code Section 27-777.1 (C26-1300.8).

b) For "General Requirements and Construction Requirements of Fuel Oil Storage Tanks" add requirements of the New York State

Department of Environmental Conservation - GNYCRR: Part 612, Part 613 and Part 614.

c) Revise NFPA 90-A, 1967 to NFPA 90-A, 1981.

d) Revise NFPA 96, 1964 to NFPA 96, 1984.

e) Revise ANSI-B9.1, 1971 to ANSI-B9.1, 1978.

PLUMBING

*27. The emergency make-up water line to the 46th floor S.B.I tanks is not part of the base building scheme. A water meter shall be installed as per N.Y.C. Building Code Section P107.3.

120588

11/23
(one set

THE PORT AUTHORITY OF NY & NJ

Memorandum
Balance - on 11/

Refer To	Date	Noted By	Da
Return To		File	

To: Arthur Coras, Manager, Quality Assurance Division
From: Luciano Sanchez
Date. November 22, 1988
Subject: THE WORLD TRADE CENTERS - SALOMON BROTHERS INC. - LEASE WTC-2305 - TCA #7004 - CONTRACT WTC-597.004 - REVIEW OF CONTRACT DRAWINGS - BASE BUILDING MODIFICATIONS FOR FLOORS 39, 45, 46 & 47

Ref: Transmittal of drawings, dated November 21, 1988

Copy To: Messrs. P. Cooper, T. Donovan, R. Linn, P. Marchese, L. Menno, E. McNierney, A. Vaccaro*

You are requested to review the drawings per attached list and specifications delivered to your office on November 22, 1988 for New York City Building Code compliance, construction details and specifications, as they apply to 7 World Trade Center.

This work will be performed under a Tenant Construction Application and consist of Architectural Structural, Mechanical, Electrical, Plumbing, Fire Protection and Vertical Transportation Modifications to the subject premises. The estimate cost for this work is not available at the present time.

In addition, all persons copied with attachments of this memorandum are also requested to submit their comments by December 15, 1988.

Should you have any questions on this matter please contact me on 466-8566 or Mr. E. McNierney on 313-2257.

Joseph P. Napoleon
for Luciano Sanchez
WTC Planning Division

E.McN/sm
* (w/att.)

office copy NOV 28 1988
W-7004 (5)
ALTERATION APPLICATION

PA 90A
3-88

11/22/88

SALOMON BROS. INC.

7 WTC

TCA 7004

DRAWING LIST

ISSUE OF NOVEMBER 21, 1988

BASE BUILDING MODIFICATIONS

FLOORS 45 - 47

AND 38TH & 39TH FLRS.

FRAMING PLANS

* = PREVIOUSLY REVIEWED (13)

(A) = APPROVED (4)

NOV 28 1988 (6)
DOB W-7004
INTERPRETATION

ISSUED FOR APPROVAL

FLOORS 45 - 47 & BASE BUILDING MODIFICATIONS

PKG #6

	DWG. Nº	REV. Nº	DATE	TITLE
*	T-1	—	NOV. 21, 1988	TITLE SHEET
	A-39	1	"	39TH FLR. PLAN
	A-45	—	"	45TH " "
	A-46	—	"	46TH FLR "
	A-47	—	"	47TH " "
*	A-200	1	"	MISC. BASE BUILDING MODIFICATION DETAILS
*	A-218	1	"	TOILET ROOM PLAN DETAILS
*	A-250	2	"	STAIR DETAILS
	A-251	—	"	STAIR DETAILS
	A-255	—	"	PARTITION SCHEDULE AND DETAILS
*	A-256	—	"	PARTITION DETAILS
*	A-353	1	"	TOILET ROOM REFLECTED CEILING PLAN
	D-45	-	"	45TH FLOOR DEMOLITION PLAN
	D-46	-	"	46TH FLOOR DEMOLITION PLAN
	D-47	—	"	47TH FLOOR DEMOLITION PLAN
*	S-13	2	"	38TH FLR. FRAMING PLAN
*	S-14	2	"	39TH FLR. " "
	S-20	1	"	45TH FLR. " "
	S-21	—	"	46TH FLR. " "
	S-22	1	"	47TH FLR. " "

NOV 28 (5)

W-7004

* = PREVIOUSLY REVIEWED

(A) = APPROVED

	DWG Nº	REV. Nº	DATE	TITLE
	S-31	—	"	COLUMN SCHEDULE VI
*	S-32 (A)	—	"	TYPICAL SUPERSTRUCTURE DETAILS & GENERAL NOTES
*	S-33 (A)	—	"	TYPICAL SUPERSTRUCTURE DETAILS
*	S-34 (A)	—	"	SUPERSTRUCTURE SECTIONS
	P-45	—	"	45 TH FLR. PLAN
	P-46	—	"	46 TH " "
	P-47	—	"	47 TH " "
	D-45 P	—	"	45 TH DEMOLITION PLAN
	HVAC-45	—	"	45 TH FLR. PLAN
	HVAC-46	—	"	46 TH " "
	HVAC-47	—	"	47 TH " "
	D-45 H	—	"	45 TH FLR. DEMOLITION PLAN
	D-46 H	—	"	46 TH " " "
	D-47 H	—	SEPT. 26, '88	47 TH " " "
	E-45	1	NOV. 21, 1988	45 TH FLR. ELECTRICAL
	D-45 E	1	"	45 TH FLR. DEMOLITION ELECTRICAL PLAN
	E-46	1	"	46 TH FLR. ELECTRICAL
	D-46 E	1	"	46 TH FLR. DEMOLITION ELECTRICAL PLAN
	E-47	1	"	47 TH FLR. ELECTRICAL
	D-47 E	1	"	47 TH FLR. DEMOLITION ELECTRICAL PLAN
*	D-1E (A)	4	"	ELECTRICAL RISER
*	E-R1	3	"	STANDBY POWER AND UPS RISER

* = PREVIOUSLY REVIEWED

(A) = APPROVED

C-45.1	—	"	45 TH FLR. BASE BUILDING COMMUNICATIONS FLOOR PLAN
C-46.1	—	"	46 TH FLR. BASE BUILDING COMMUNICATIONS FLOOR PLAN
C-47.1	—	"	47 TH FLR. BASE BUILDING COMMUNICATIONS FLOOR PLAN

* = PREVIOUSLY REVIEWED

(A) = APPROVED

SECTION 04200

UNIT MASONRY

Office copy NOV 28 W-7004 (6)

PART 1 - GENERAL

1.01 DESCRIPTION

A. General: Provide unit masonry in accordance with the Contract Documents.

B. Related Work Specified Elsewhere

1. Miscellaneous metal lintels and accessories.

1.02 STANDARDS

A. Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations of PCA "Concrete Masonry Handbook".

B. Where the language in any document referred to herein is in the form of a recommendation or suggestion, such recommendations or suggestions shall be deemed to be mandatory under this Contract.

1.03 SUBMITTALS

A. Samples: Submit samples of each type of masonry unit for acceptance of color and texture only. Compliance with other requirements is the responsibility of the Contractor.

B. Manufacturer's Data: Submit manufacturer's printed literature indicating product information correlated to specified requirements. Submit manufacturer's specifications, with certified copies of laboratory test reports and other data as may be required to show compliance with the Contract Documents for each type of masonry unit specified herein.

1.05 PRODUCT HANDLING

A. Deliver masonry materials, other than bulk materials to Project site in manufacturer's unopened containers, bundles, pallets or other standard packaging devices; fully identified with name, type, grade, color and size.

B. Store on platforms and protect from weather, soiling and damage.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: The total chloride (CL) ion content for mortar and grout materials shall not exceed the values specified in "Mixes".

B. Portland Cement: ASTM C150, Type I.

C. White Portland Cement (For Face Brick): ASTM C150, Type I, domestic manufacturer, non-staining in accordance with the definition and test requirements of ASTM C91.

D. Hydrated Lime: ASTM C207, Type S.

E. Sand: ASTM C144.

F. Concrete Masonry Units: ASTM C90, Grade N-1 and ASTM C145, Grade N-1, modified as follows:

1. Aggregates: Lightweight, complying with ASTM C331; Haydite, Norlite, Solite or Waylite; producing a concrete density not exceeding 95 lbs. per cu. ft.

2 Face Size: 8 in. x 18 in., unless otherwise shown.

3. Curing: Low pressure steam cure at a pressure of 10 psi. Raise the curing temperature uniformly at not more than 1 deg. F. per minute from 85 deg. F. to 150 deg. F. and allow the masonry units to cure for approximately 3-1/2 hours from initial set period. Thereafter keep the units moist for a period of 7 days by means of a fine water spray and then allow to air dry for 14 days. Allow an interval of not less than 3 hours between the forming of the units and the curing process.

4. Linear Shrinkage: Not over 0.03%.

5. Moisture Content: Not over 40%.

6. Exposed Units: Provide units for exposed construction with fine textured surface, sharp straight arrises, and without defects on exposed edges or surfaces which would impair appearance.

G. Water: Clear and free of deleterious material which would impair the Work.

H. Anchors and Ties: Steel, hot-dipped heavily galvanized steel in accordance with ASTM A153, Class B2, complying with the following requirements:

1. Wire Ties: 10 gage, looped at both ends.

2. Wire Mesh Ties: 16 gage, 1/2 in. mesh, 3 in. wide, length as required.

3. Hardware Cloth: 16 ga. 1/2 in. mesh, size as required.

4. Anchor Straps: 1-1/4 in. x 1/8 in. by length required, with ends turned up 2 in.

5. Column and Beam Anchors: ASTM A36 steel, 1/4 in. minimum thickness; hot-dipped galvanized in accordance with ASTM A153, Class B-1. Provide units of profiles and sizes as required for locations shown.

I. Horizontal Joint Reinforcement: Truss type, fabricated from 9 ga. cold drawn steel wire complying with ASTM A82; deformed side rods; smooth cross rods; out to out spacing of side rods not less than 2 in. less than nominal wall dimension. Provide manufacturer's standard or custom fabrications to comply with the specified requirements.

1. Single Wythe: One piece hot-dipped galvanized truss-type horizontal joint reinforcement with prefabricated corner and tee units. Sizes as required for walls shown.

a. "Dur-O-Wall Truss, Standard" (Dur-O-Wall).

b. "Blok-Trus, AA600" (AA Wire Products).

J. Admixtures: Set accelerators, anti-freeze compounds, mortar extenders and air-entraining and other admixtures are prohibited.

2.02 MIXES

A. General: The total chloride (CL) ion content in the entire mortar mix shall not exceed 0.10% of the weight of cement. Mortar and grout with excess chlorides will be subject to removal.

B. Mortar for Unit Masonry: ASTM C270, Portland Cement-Lime Mortar; Type N for interior work. Do not use quicklime or masonry cement for mortar.

2.03 MEASUREMENT AND MIXING

A. Comply with ASTM C270 for measuring and mixing of mortar materials and for retempering of mixed mortar. Measure and mix mortar to provide the following properties:

1. Compressive Strength: Minimum 28-day strength as follows:

a. Type N: 750 psi.

2. Water Retention: 75%, minimum.

3. Air Content: 12%, maximum.

B. Comply with ASTM C476 for measuring and mixing of grout materials.

C. Use accurate measuring devices to mix materials by volume. The use of shovels for measurement is prohibited.

D. Mix only sufficient mortar as required at a given time. Retemper stiffened mortar as required, except discard mortar not utilized within 2 hrs. of initial mixing.

PART 3 - EXECUTION

3.01 INSTALLATION - GENERAL

A. Comply with the applicable provisions and recommendations of the related documents as specified in Paragraph "Standards".

B. Lay masonry plumb, true to line with level and accurately spaced courses; corners plumb and true; each course breaking joint with the course below, except as may be otherwise indicated or specified. Maintain plumb bond.

C. Anchor, tie, reinforce and bond masonry at corners and intersections in accordance with the applicable requirements of governmental authorities having jurisdiction.

D. Step back unfinished work for joining with new work; toothing will not be permitted. Before new work is started remove all loose mortar.

E. No cracked, chipped, broken, discolored, defaced or open celled units will be permitted on exposed masonry.

F. Cutting, patching and repairing in connection with masonry work as required to accommodate the work of other trades shall be performed under this Section.

G. Use motor driven diamond saw designed to cut masonry units with clean sharp corners. Cut units as required to provide pattern shown and to fit adjoining work neatly. Use full units without cutting wherever possible. Avoid the use of less than half-size units at corners, jambs and at other locations.

H. Joints: Tool exposed joints slightly concave unless otherwise shown. For surfaces to be plastered, rake joints to obtain bond. Lay masonry unit with uniform joint widths. Tool joints to squeeze mortar back into joints. Tool after mortar has taken its initial set. At inside face of exposed masonry air shafts, strike joints flush.

I. Anchors and Ties: Provide loose anchors and ties where shown and where required to supplement other reinforcement specified.

1. Space loose anchors and ties a maximum of 16 in. o.c. horizontally and vertically.

2. Set anchors, with vertical legs, within the core of the masonry wythe and fill core solid with mortar.

3. Provide wire mesh ties, hardware cloth, or expanded lath below core space to retain mortar or grout at embedded anchors.

4. Provide loose anchors at columns, beams and other structural elements as shown and as required to support imposed loads. Install anchors to structural elements to prevent rattle and lateral displacement in any direction.

3.02 LAYING CONCRETE MASONRY UNITS

A. Erect concrete masonry units (CMU) where shown. Solidly bed each course in mortar. Butter vertical joints their entire length. Bond each course at corners and intersections and bond into or anchor to adjacent construction with metal anchors spaced not over 32 in. o.c. in both directions.

B. Set units with care around frames so as not to bulge the sides or change the position of the frames. Break joints in units set around the tops of door frames so as to minimize the danger of loosening the units due to door jarring. Set units tightly against metal frames and fill voids completely. Build frame anchors into joints. Cut units accurately to fit around pipes, ducts, openings, etc. and fill voids full. Fill jambs and head of hollow metal frames solid with mortar.

C. Build partitions of thickness shown. Give sufficient opportunity to the various trades to install built-in work before proceeding with the partitions, leaving openings where required for testing, etc.; such openings to be closed up later. Lay first course directly on structural slab with cells vertical and fill cells with mortar to one-half the height of the unit. Construct masonry partitions full height and terminate against underside of structure above unless otherwise shown. Rake joint at top of walls in exposed locations 1/2 in. and leave ready for sealing specified under Section "Sealants".

D. Line up courses of exposed work throughout to obtain a uniform appearance. Install units at locations where conduits, pipes, etc. are to be enclosed in a manner to produce the regular jointing pattern of the adjacent surfaces. Provide necessary reinforcement for bonding where block units are used. Holes made in exposed units for attachment of handrail brackets and similar items shall be neatly drilled. Provide necessary special jamb, irregular and regular angle units where required to obtain smooth, evenly jointed and regular patterns throughout exposed surfaces.

E. Joint Reinforcement: Place joint reinforcement in horizontal mortar joints on 16 in. centers unless otherwise shown. Make reinforcement continuous except at control joints and expansion joints. Lap reinforcement 6 in. at ends and use prefabricated "T" and "L" sections at corners and intersections to provide continuity. Provide reinforcement in first and second bed joints above lintels and below sills extending 2 ft. beyond jamb openings.

G. Lintels: Provide concrete masonry lintels consisting of specially formed units, with reinforcing bars and mortar fill, wherever shown and wherever openings in concrete masonry of more than 1 ft. are shown without structural steel or other supporting lintels. Unless otherwise shown provide one bar for each 4 in. thickness of wall, and use bars of a size number not less than the number of feet of opening width. Provide minimum lintel bearing at each jamb of 4 in. for openings which do not exceed 6 ft. and 8 in. for openings in excess of 6 ft. Precast lintels or form lintels in place with adequate temporary support. Cure precast lintels thoroughly before handling and installing.

3.03 BUILT-IN WORK

A. Build in frames, struts, hangers, miscellaneous metal and other items of work furnished under other Sections. Prepare for, build in and protect reglets, anchors and other similar items occurring in connection with work of this Section. Set and grout loose lintels. Build in all anchors, furnishing such as may be required exclusively by reason of work under this Section.

B. Install access doors, frames and access panels occurring in masonry construction where shown and required for access to mechanical and electrical installations and equipment.

C. Chases, slots, reglets or openings necessary for the proper installation of work of other trades shall be formed as required. Keep chases and reglets free from mortar or other debris.

3.04 POINTING AND CLEANING

A. Execute work in as clean a manner as possible, removing excess materials and mortar droppings daily. Remove mortar droppings on connecting or adjoining work before it has attained final set.

B. At completion of any portion of work, point holes in joints of exposed masonry surfaces by completely filling with mortar. After pointing has hardened clean the masonry surfaces. Clean masonry in small sections prior to the installation of contiguous work by other trades.

D. Concrete masonry units which are to remain exposed in the finished work shall be cleaned down by the use of wire brushes or other method which will produce a satisfactory surface.

E. Remove and replace defective materials; correct defective workmanship; leave all masonry clean.

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SECTION 09310

CERAMIC TILE

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PART 1 - GENERAL

1.01 DESCRIPTION

A. General: Provide ceramic tile in accordance with the Contract Documents.

1.02 STANDARDS

A. Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations of the following:

1. TCA "Handbook for Ceramic Tile Installation".

1.03 SUBMITTALS

A. Samples: Submit samples of each type, class and color of tile, not less than 12 in. square on plywood backing, and grouted as required. Sample submittal and Architect's acceptance shall be for color, pattern and texture only. Compliance with all other requirements is the responsibility of the Contractor.

B. Certification

1. Furnish a "Master Grade Certificate" in the form approved in TCA 137.1 for each type of tile, signed by the manufacturer, certifying to the grade, type and quantity of tile, together with satisfactory information for identification of the containers to which they apply.

2. Submit certification from the manufacturers of dry-set mortar and grouts that they are licensed by the Tile Council of America to produce such products.

1.04 PRODUCT HANDLING

A. Deliver materials, other than bulk materials, in manufacturer's unopened containers fully identified with grade labels as specified in TCA 137.1, and with name, brand, type, class, size, color and pattern. Store all materials above grade and protect from weather and damage from any source. Store in accordance with manufacturer's instructions.

1.05 EXTRA STOCK

A. Deliver to Owner, at job site, one unopened box of each type of tile installed.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Provide tile of domestic manufacture, standard grade, complying with TCA A137.1. Tile shall match samples accepted by the Architect in all respects. Obtain each material required for any one type and color of tile work from a single source, so as to minimize variations in appearance and quality.

B. Ceramic Mosaic Wall Tile: Porcelain body, unglazed, with all purpose edges, 2 in. x 2 in., unless otherwise shown. Cove type bases. Provide bull-nosed external corners and square internal corners. Colors as specified in the Tile Schedule.

C. Ceramic Mosaic Floor Tile: Porcelain body, unglazed, with all purpose edges, 2 in. x 2 in., unless otherwise shown. Colors as specified in the Tile Schedule.

D. Marble Saddles: Fabricate from highest grade Madre Cream Alabama or Georgie White marble, cut from sound stock, free from cracks, and spalled edges. Honed finish on exposed surfaces.

E. Trim Shapes: Shaped as shown for typical conditions and as required to make a complete installation at all conditions. Match type, class, color and edge of adjoining field units and coordinate sizes with field units.

F. Portland Cement: ASTM C150, Type I; white where required to match Architect's sample.

G. Hydrated Lime: ASTM C206, Type S, or ASTM C207, Type S.

H. Pigments: Pure mineral pigments, resistant to alkalies, non-fading and weatherproof, colors as required to match Architect's sample.

I. Water: Clear and without deleterious substances which would impair the work.

J. Sand: ASTM C144.

K. Reinforcement: ASTM A185, 2 in. x 2 in. x 14 gage welded wire mesh, galvanized.

L. Sealer (for Substrate): As recommended by manufacturer of setting bed.

M. Waterproofing Membrane: Trowel-applied, load bearing, water dispersed, 100% neoprene resin elastomeric membrane reinforced with glass fiber fabric. Provide manufacturer's complete system to achieve a total thickness of not less than 1/16 in.

1. "Dex-O-Tex Membrane Waterproofing" (Crossfield Products Corp.).

2. "Promdek Waterproof Membrane" (Selby-Battersby & Co.).

3. "Neo-V, Type II" (MacNaughton-Brooks).

2.02 TILE SCHEDULE

A. Tile Type CT-1: "Mfg. No. A-13" (American Olean); 2" x 2" unglazed; color: Dawn Grey.

B. Tile Type CT-2: "Mfg. No. A-10" (American Olean); 2" x 2" unglazed; color: White.

2.03 MORTARS AND GROUTS

A. Portland Cement Mortar: Comply with ANSI A108 Standards for mixes.

B. Dry-Set Mortar: ANSI A118.1. Also comply with TCA Formula 759 for use with impervious and vitreous tile, and with TCA Formula 763 for use with non-vitreous tile. Mix sand in the formula at the factory.

C. Organic Tile Adhesive: ANSI A136.1, Type 1.

D. Adhesive Over Waterproofing Membrane: Liquid neoprene adhesive specially formulated by the waterproofing membrane manufacturer for use to adhere ceramic tile directly to neoprene waterproofing as specified herein, and compatible with neoprene waterproofing..

1. "BC-100" (Crossfield Products).

2. "Fore and Aft" (Selby-Battersby & Co.).

E. Grout for Wall Tile: Color as shown or as required to match Architect's sample and complying with ANSI A118.6: one of the following.

1. "L & M Dry Cure" (L & M - Surco Mfg., Inc.).

2. "Tile-Mate 719" (The Upco Co.).

3. "Bonsal Dense Grout" (W.R. Bonsal Co.)

4. "Dry Tile Grout" (Bostik Construction Products)

F. Grout for Floor Tile: Color as shown or as required to match Architect's sample, one of the following:

1. "L & M Floor Grout" (L & M-- Surco Mfg., Inc.).

2. "Hydroment Ceramic Tile Grout" (The Upco Co.).

3. "Bonsal Dense Grout" (W.R. Bonsal Co.)

4. "Ceramic Tile Grout" (Bostik Construction Products)

PART 3 - EXECUTION

3.01 CONDITION OF SURFACES

A. Examine the substrates, adjoining construction and the conditions under which the Work is to be installed. Do not proceed with the Work until unsatisfactory conditions have been corrected.

B. Allowable Variations in Substrate Levels

1. Mortar Set Floors: +/- 1/4 in. in 10 ft. distance and 3/8 in. total maximum variation from levels shown.

C. Grind or fill concrete, masonry and plaster substrates as required to comply with allowable variations.

3.02 PREPARATION

A. Etch substrate with 10% solution of muriatic acid as may be required to remove curing compounds or other substances that would interfere with proper bond of mortar or adhesive for tile. Rinse with water to remove all traces of acid.

B. Seal substrate with sealer as recommended by manufacturer of mortar or adhesive.

3.03 INSTALLATION

A. Unless otherwise shown or specified comply with the referenced standards and the manufacturer's instructions.

B. Allowable Variations in Finished Work: Do not exceed the following deviations from level and plumb, and from elevations, locations, slopes and alignments shown:

1. Floors: 1/8 in. in 10 ft. run, any direction; +/- 1/8 in. at any location; 1/32 in. offset at any location.

2. Walls: 1/8 in. in 8 ft. run, any direction; +/- 1/8 in. at any location; 1/32 in. offset at any location.

3. Joints: +/- 1/32 in. joint width variation at any location; 1/16 in. in 3 ft. run for deviation from plumb and true, and for other variations in alignment of joints.

C. Lay out tile work in pattern shown using field tile and trim shapes as shown or required. Center tile fields both directions in each space or on each wall area and adjust to minimize tile cutting. Use uniform joint widths of 1/16 in. for tile unless otherwise shown. Cut field tile, not trim shapes, unless otherwise shown.

D. Extend tile work into recesses and under equipment and fixtures in the spaces shown or scheduled to receive tile. Form a complete covering without interruptions as required to comply with . requirements. Terminate work neatly at obstructions, edges and corners without disruption of pattern or joint alignments.

E. Install reinforcement in all horizontal mortar setting beds over membrane waterproofing.

F. Setting Tile on Cement Setting Bed: Comply with TCA Method F112. Use either portland cement paste to set tile on a plastic setting bed per ANSI A108.1 , or dry set mortar or latex portland cement to set tile on a cured cement setting bed per ANSI A108.5. If dry-set mortar is used compact and level the cement setting bed accurately and allow it to set firmly before installing tile.

G. Dry-Set Installation: Except for installations directly on wood or metal substrate use dry-set mortar for dry-set tile work, unless otherwise shown. Comply with TCA Method F113 and ANSI A108.5 for installation of tile.

H. Adhesive Installation: Use organic tile adhesive for setting tile on gypsum wallboard and elsewhere as shown. Comply with TCA Methods W223 or W242 and ANSI A108.4 for installation of tile.

I. Waterproofing Membrane Installation: In areas shown, install membrane waterproofing as per recommendations and instructions of the manufacturer. Where required, use membrane waterproofing tile adhesive to set tile flooring using methods as recommended by the membrane waterproofing manufacturer.

J. Grout: Unless otherwise shown use grout specified for porcelain body tile. Comply with the following for grouting: ANSI 108.10.

H. Marble Saddles: Install in one piece, fit neatly to door jambs and backpaint with "R.I.W. No. 110" (Toch Bros.) before setting in full mortar bed. Comply with TCA Method TH611.

3.04 CLEANING

A. In addition to the initial cleaning procedure required, and not more than 2 days before occupancy or preliminary acceptance by the Owner, clean ceramic tile work as recommended by the tile manufacturer and TCA.

B. Protect tile work during the construction period so that it will be without any indication of use or damage at the time of acceptance.

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SECTION 10210

EXTERIOR METAL LOUVERS

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PART 1 - GENERAL

1.01 DESCRIPTION

A. General: Provide exterior metal louvers in accordance with the Contract Documents.

B. Related Work Specified Elsewhere

1. Sealant at perimeter of louvers.

2. Interior steel louvers.

1.02 STANDARDS

A. Except as modified by governing codes and by the Contract Documents, comply with the applicable provisions and recommendations of the following standards:

1. Air Movement and Control Association, Inc. "AMCA Standard 500".

2. NAAMM "Metal Finishes Manual".

3. AAMA 605.2 "Specification for High Performance Organic Coatings on Architectural Extrusions and Panels".

1.03 SUBMITTALS

A. Shop Drawings: Submit shop drawings and calculations for all portions of the Work. Show typical details of all conditions for every member, joint and anchorage system. Shop drawings and calculations shall be approved and sealed by a licensed Professional Engineer registered in the State of New York. In addition, shop drawings shall be approved by the base building architect.

B. Samples: Submit 3 sets of samples for each finish and color required. Submit sample finishes on aluminum having the specified alloy, temper and thickness of metal required for the Work. Provide 12 in. lengths for extrusions and 12 in. squares for sheet or plate; showing the maximum range or variation in color and shade.

C. Guarantee, Resinous Coatings: Submit a guarantee for a period of 5 years, guaranteeing the integrity of film and permanence of color of the resinous coatings.

1. Color fade not to exceed 5 E units (NBS) as calculated in accordance with ASTM D2244 on exposed surfaces cleaned with clean water and a soft cloth.

2. Degree of chalking not to exceed Rating No. 8 when measured in accordance with ASTM D659 on exposed unwashed surfaces.

D. Certifications: Submit certifications on air performance and water penetration as per AMCA Standard 500.

1.04 PERFORMANCE CRITERIA

A. Design, fabricate and install component parts so that the completed exterior metal louvers will withstand the inward and outward pressures normal to the plane of the enclosure as shown on base building drawings. Maximum allowable deflection L/180.

B. Design, fabricate and install component parts to provide for expansion and contraction of the louvers over an ambient temperature range of 120 deg. F. and a surface temperature range of 180 deg. F. without buckling, sealed joint failure, undue stress on members or anchors, and other detrimental effects.

C. Permanent deformation, weld or fastener failure, component disengagement or breakage shall not occur under loading equal to 1.5 times the design load pressures (positive and negative) specified herein. Permanent deformation is defined as deflection without recovery exceeding length/1000.

D. Provide exterior metal louvers bearing AMCA certified rating seal and meeting the following performance requirements:

1. Free Area: Not less than 50% for a 48 in. x 48 in. size.

2. Static Pressure Loss: Not more than 0.15 in. of water gage at an airflow of 1050 fpm free area velocity in intake direction.

3. Water Penetration: Not more than 0.05 oz./sq. ft. of free area at an airflow of 1000 fpm free air velocity.

E. All exterior metal louvers utilized in the final Work shall provide the percentage of free air shown on the Drawings for the respective locations.

F. Design louvers so that objectionable noises are not created when installed louvers are subjected to wind loads within the range from 0.0 psf to the design load specified.

1.05 PRODUCT HANDLING

A. Store in accordance with manufacturer's instructions, above grade on dunnage, properly protected from the weather and construction activities.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Aluminum Extrusions: Shapes as shown and as required to fulfill performance requirements, but not less than 1/8 in. thick, unless otherwise shown. Suitable alloy and proper temper for extruding and fabricating with adequate structural characteristics, and suitable for finishing as specified.

B. Aluminum Sheets and Plates: Sizes as shown and minimum thickness of 0.081 in. and as required to fulfill performance requirements. Suitable alloy and proper temper for forming and fabricating with adequate structural characteristics and suitable for finishing as specified.

C. Resinous Coating: AA-C12RIx and AAMA 605.2 in color as selected, using 70% minimum "Kynar 500 Fluorocarbon Resin" (Pennwalt Chemicals Corp.), applied to a dry film thickness of 1.2 mil.

D. Steel Angles, Plates, Bars, Rods and Other Steel Accessories Required to Join or Reinforce Assembly of Aluminum Components: ASTM A36 and ASTM A 283, galvanized or, if galvanized is not compatible with alloy of component parts, shop painted with zinc chromate primer after cutting to size.

E. Aluminum Angles, Plates, Bars, and other Aluminum Members Required to Join or Reinforce Assembly of Aluminum Components: Alloys recommended by manufacturer or fabricator to develop required strength of assembly.

F. Fasteners: Stainless steel type 300 series, selected to prevent galvanic action with the components fastened. Where exposed in finished surfaces, use oval-head countersunk Phillips heads with head diameter one screw size smaller than the shank diameter and color to match adjacent surfaces.

G. Dielectric Separator: "Bitumastic 50" (Koppers Co., Inc.) or "Jennite J-16" (Maintenance Coatings Co.).

2.02 MANUFACTURER

A. Products specified herein by proprietary designation are as manufactured by Arrow United Industries, Inc.. Equivalent products of other manufacturers will be considered provided they meet those established standards.

B. Louver Type: "SP-11 Special".

2.03 FABRICATION

A. Complete the welding, cutting, drilling and fitting of joints prior to finishing. Weld with electrodes and by methods recommended by the aluminum manufacturer in accordance with applicable recommendations of the AWS. Use only methods which will avoid distortion or discoloration of exposed faces. Grind weld areas smooth and restore mechanical finish condition before proceeding with other treatment.

B. Conceal all fastenings unless otherwise shown or specified. Fit and assemble all work in the shop insofar as practicable.

C. Fabricate louver blades and frames in a single length for each section. Reinforce as necessary to meet performance criteria.

D. Carefully fit and match all work with continuity of line and design, using rigidly secured joints with hairline contact, unless otherwise shown.

E. In areas as shown or as required, provide split mullions designed to accommodate expansion and contraction due to temperature change. Provide sizes and profiles as shown and to match adjacent construction.

F. Reinforce members and joints for rigidity and strength as needed to fulfill performance requirements. Use concealed stainless steel fasteners for jointing which cannot be welded.

G. Provide removable, rewireable bird screens fabricated of same metal and finish as louvers set in a folded extruded frame. Screen shall be 1/2 in. x 1/2 in. mesh of 0.063 aluminum wire. Locate screens on inside face louvers, unless otherwise shown. Secure screens to louver frames with screws spaced at each corner and at 12 in. o.c. minimum.

H. Provide blank-off plates in areas as shown and where ducts do not attach to louver, fabricated of 0.063 in. thick aluminum. Finish shall match finish of louvers and frames.

I. Separate unlike metals or alloys with a heavy coating of dielectric separator as required to prevent galvanic action.

J. Design stormproof units to collect and drain water to exterior sill by means of gutters in front edge of blades, and channels with blades and frames of profiles indicated.

PART 3 - EXECUTION

3.01 CONDITIONS OF SURFACES

A. Examine substrates, adjoining construction and conditions under which Work is to be installed. Do not proceed with the Work until unsatisfactory conditions have been corrected.

3.02 ERECTION

A. General

1. Verify dimensions of supporting structure by field measurements so that louver work will be accurately designed, fabricated and fitted to the structure. Tolerances for supporting structure are specified in other Sections.

2. Coordinate louver work with the work of other Sections and provide items to be placed during the installation of other work at the proper time to avoid delays in the work. Place such items, including inserts and anchors, accurately in relation to the final location of louver components.

3. Erect all component parts in accordance with the manufacturer's written instructions and recommendations.

4. Dimensions shown on Drawings are based on an assumed design temperature of 70 deg. F. Fabrication and erection procedures shall take into account the ambient temperature range at the time of the respective operations.

5. Set units level, plumb, and true to line, with uniform joints.

6. Paint clip angles and other ferrous metal parts with a zinc chromate paint.

7. Seal joints in a concealed manner, unless exposed sealant is shown.

8. Paint concealed contact surfaces of dissimilar materials with a heavy coating of dielectric separator or provide other separation as per manufacturer's recommendations.

9. Do not erect components which are observed to be warped, bowed, deformed or otherwise damaged or defaced to such extent as to impair strength or appearance. Remove and replace components damaged in the process of erection.

10. Comply with the following erection tolerances:

a. Deviation from plumb:	1/8 in. maximum in any 10 ft. run.
b. Deviation from level:	1/8 in. maximum in any 20 ft., non-cumulative.
c. Offset in edge to edge alignment of adjacent louvers:	1/16 in. maximum

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SECTION 09510

ACOUSTICAL CEILINGS

PART 1 - GENERAL

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1.01 DESCRIPTION

A. General: Provide acoustical ceilings in accordance with the Contract Documents.

1.02 QUALIFICATIONS

A. The acoustical ceiling work shall be performed by a firm having 5 years experience in the installation of materials specified herein on projects comparable to this Project. The firm shall have the approval of the acoustical materials manufacturer.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

A. Provide acoustical ceiling components which have been approved for installation in the City of New York.

1.04 PERFORMANCE REQUIREMENTS

A. In areas where gypsum drywall partitions are dependent on the ceiling suspension system for lateral support, design and install primary and exposed mechanical suspension system members to sustain the imposed load from the completed partition system including a minimum inward and outward pressure of 5 psf normal to the plane of the wall.

1.05 SUBMITTALS

A. Samples: Submit samples of each acoustical material specified. Each set of samples shall show the full range of texture and color to be expected in the completed work. Sample submittal and Architect's acceptance will be for color and texture only. Compliance with all other requirements is the responsibility of the Contractor.

1. Acoustic Board - full size.

2. Acoustic tile - full size.

3. Metal Pan - full size.

4. Exposed tees and moldings - 1 ft. lengths.

B. Shop Drawings: Submit details and reflected ceiling plans of acoustical ceilings before proceeding with Work. Show location of items of work which are to be coordinated with the acoustical ceilings or are to be supported by the acoustical ceiling system.

C. Manufacturer's Data: Submit manufacturer's specifications and installation instructions for each acoustical material, suspension system and other products required, including certified laboratory test reports and other data as may be required to show compliance with the Contract Documents..

1.06 MOCK-UP

A. Provide mock-up of each type of acoustical ceiling, including lighting fixtures, in a space within the building to be designated by the Architect. Mock-up shall be representative of the finished work in all respects.

B. Mock-ups may be installed in final locations and if accepted, may be utilized in the finished work.

1.07 PRODUCT HANDLING

A. Deliver materials to the Project site in manufacturer's unopened containers, clearly indicating manufacturer's name, brand, type, style, size, color, texture and other identifying information.

B. Store materials in a dry location, off the ground and in a manner to prevent damage, deterioration and intrusion of foreign matter. Replace materials which have been damaged or are otherwise unfit for use.

1.08 ENVIRONMENTAL CONDITIONS

A. Do not install acoustical materials unless temperature and humidity conditions closely approximate the interior conditions which will exist when the building is occupied. Maintain temperature/humidity conditions before, during, and after installation. Plastering, concrete and terrazzo work (including grinding) shall be complete and dry. Windows and doors shall be in place and glazed.

1.09 EXTRA STOCK

A. Furnish to the Owner and store at the site where directed, 2% of each type of acoustic tile and acoustic board installed in the Project, packaged in manufacturer's unopened cartons and indentified as to contents.

B. Furnish quantity of each exposed component of suspension systems equal to 2% of amount installed in the Project.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Acoustic Board (ACT-1): "Fine Fissured Travertone" (Armstrong World Industries); 30 in. x 30 in. x 3/4 in. thick with tegular edge; non-combustible, mineral fiberboard with washable white vinyl latex paint finish. Size specified for tile is nominal and must be coordinated with specified exposed grid system to provide a tight fit without movement.

1. Performance Requirements: Material type and face size as shown with the following minimum characteristics:

a. Light Reflectance: ASTM C523, 0.75 or more.

b. Flame Spread: ASTM E84, Flame Spread 25 or less.

c. Sound Absorption: ASTM C423, NRC not less than 0.65.

d. Sound Transmission Class: ASTM E90, not less than 40.

B. Acoustic Tile (ACT-2): "No. 749A" (Armstrong World Industries); 12 in. x 12 in. x 5/8 in. thick with beveled edge K4C4; non-perforated mineral fiber core clad in aluminum with a baked-on white paint finish.

1. Performance Requirements

a. Light Reflectance: ASTM C523, 0.75 or more.

b. Flame Spread: ASTM E84, Flame Spread 25 or less.

c. Sound Transmission Class: ASTM E90, not less than 40.

C. Metal Pan Acoustic Tile (ACT-3)

1. Aluminum: Easily removable snap-in type 2 ft. x 1 ft. face size scored in center to give 1 ft. x 1 ft. appearance; unit formed of not less than 0.025 in. thick 5005-H18 aluminum alloy. Finish with satin anodizing, 0.004 in. thick. Finish with 2 baked-on coats of alkyd enamel in satin white.

D. Primary Suspension Members

1. General: Size and provide ceiling support components to comply with ASTM C635 (Heavy Duty Classification) and with Referenced Standard 6-16 of the NYC Building Code.

2. Hanger Anchorage Devices: Screws, clips, bolts or other devices applicable to the indicated method of structural anchorage for ceiling hangers. Provide anchorage devices sized for three (3) times the calculated load supported.

3. Steel Angle Hanger Inserts: ASTM A36. Provide 4 in. x 3 in. x 3/16 in. steel angles with 7/16 in. holes punched on center line and lower ends, designed to develop the full strength of hangers, and to permit anchor bolt attachment to existing slab.

4. Hangers: Galvanized, 1 in. x 3/16 in. steel straps or 1/4 in. diameter steel pencil rods.

5. Carrying Channels: ASTM C754, Cold rolled steel channels, 1-1/2 in., 475 lbs. per 1000 linear ft.

E. Exposed Mechanical Suspension system for Acoustic Board (Type ACT-1): Manufacturer's standard design complete with hangers, main tees, cross tees, splices, angle molding, hold down clips and accessories as required. Include the required framing and support for light fixtures and other items occurring in or on the ceiling with maximum deflection not to exceed 1/360 of the span. Provide partition attachment clips for areas where partition ceiling runners are secured to the ceiling suspension system. Include components as follows:

1. Primary suspension members.

2. Main Tee and Cross Tee System: ASTM C635 ('Heavy Duty Classification' for main tees); 1-5/8 in. high with a 9/16 in face with a 1/4 in. center regress fabricated from commercial grade cold-rolled steel sections; notched and mitered at all intersection; Provide one of the following:

   a. "Ultraline 3500" (Chicago Metallic Corp.).

   b. "Fineline Grid System" (Donn Division, U.S. Gypsum Co.).

3. Metal Wall Moldings: Notched metal wall moldings coordinated to match main tee and cross tee system as shown; finished to match remaining grid.

4. Accessories: Galvanized steel, specifically designed for use with the main components.

5. Exposed Finish: Chemically clean, electro-galvanized and bonderized on all rolled formed parts. Finish with a white baked-on enamel coating, to match finish of acoustic boards unless othewise shown.

F. Concealed Mechanical Suspension System for Acoustic Tile: Manufacturer's standard H and T, Z spline or C spline type; ASTM C635 Classification "Heavy Duty" design; galvanized of suitable design and adequate strength and with members properly spaced to support the acoustical ceiling units and ceiling fixtures such as lights, diffusers, etc., to the finished lines and levels shown with maximum deflection not to exceed 1/360 of the span. Components as follows:

1. Primary Suspension Members

2. Metal Wall Moldings

3. Support of Light Fixtures: System and materials as required to adequately support light fixtures and other items occurring in or on the ceiling.

G. Concealed Mechanical Suspension System for Metal Pan Units: Manufacturer's standard system complete with all required utility angles, snap bars and slip molds, formed of not less than 20 gage galvanized steel, or tee suspension runners. Include the required framing and support for light fixtures and other items occurring in or on the ceiling with maximum deflection not to exceed 1/360 of the span. Include the following items:

1. Primary Suspension Members

2. Metal Wall Moldings

H. Metal Wall Moldings: Roll formed steel with manufacturer's stepped angle baked-on white enamel coating to match finish of acoustical material.

PART 3 - EXECUTION

3.01 CONDITION OF SURFACES

A. Examine the substrates, adjoining construction and the conditions under which the Work is to be installed. Do not proceed with the work until unsatisfactory conditions have been corrected.

B. Review existing structure for anchorage of specified hangers. Anchor hangers to existing structural concrete or existing structural steel or provide supplemental steel members for support of system.

C. Pre-Istallation Meeting: Prior to installation of acoustical ceilings, and at the direction of the Contractor, meet at the Project site to review the material selections, installation procedures and coordination of the Work with other trades. Meeting shall include the Contractor, acoustical ceiling subcontractor, manufacturer's representatives, and any other subcontractors whose work requires coordination with this Work.

3.02 INSTALLATION - GENERAL

A. Verify all measurements and dimensions at the Project site and coordinate the Work with the work of other trades, with particular attention given to the work of mechanical and electrical trades.

B. Install all materials and systems in accordance with manufacturer's printed instructions unless otherwise shown or directed.

C. Make all exposed surfaces of acoustical units level and flush with all joints straight and true. Neatly cut and fit units around light fixtures and around other items protruding through acoustical ceilings. Install all exposed members with flush hairline joints.

D. Install edge moldings of type indicated at perimeter of acoustical ceiling area and at locations where necessary to conceal edges of acoustical units. Screw attach moldings to substrate at intervals of 16 in. o.c. maximum, and not more than 3 in. from ends, leveling with ceiling suspension system to a tolerance of 1/8 in. in 12 ft. Miter corners accurately and connect securely.

E. Factory drill acoustic board occurring at hidden loudspeakers and fire alarm gongs in pattern as shown.

F. Center board pattern both directions in each major space or room as shown or directed and, where possible, adjust pattern so that edge pieces will be not less than 1/2 unit in width.

G. Run grain of units in one direction, as shown or directed, and align joints in both directions unless otherwise shown.

H. Use procedures that will minimize damage or soiling of the units during installation. Replace units which are damaged or cannot be adequately cleaned as directed.

3.03 INSTALLATION OF MECHANICAL SUSPENSION SYSTEM, GENERAL

A. Install primary suspension members and mechanical suspension system in accordance with ASTM C636 and manufacturer's written instructions to support required loads and to prevent deflection in excess of 1/360 of the span. Water or laser level accurately in both directions, leveling to a tolerance of 1/8 in. in 12 ft.

B. Install suspension systems with hangers supported only from building structural members. Locate hangers not less than 6 in. from each end and spaced 4 ft. maximum along each carrying channel or runner. Coordinate spacing of hangers, carrying channels, runners and molding with the location of electrical fixtures, sprinkler heads, and other items occurring in or on the ceiling. Splay hangers only where required to miss obstructions and offset horizontal force by bracing or other approved methods.

3.04 INSTALLATION OF ACOUSTIC TILE, CONCEALED SYSTEM

A. Install acoustic tile by inserting spline flanges in kerfed edges of the tile. Align abutting edges of tile by inserting flat steel splines into the transverse edges of the tile.

B. Install wall moldings continuously wherever tile abuts other materials and at wall intersections where tile terminates, unless shown otherwise. Align moldings accurately and fasten securely to construction. Place spring steel spacers into molding 12 in. o.c. to hold tile field in compression.

3.05 INSTALLATION OF ACOUSTIC BOARD, EXPOSED SYSTEM

A. Install board with edges resting on flanges of tees. Cut and fit board neatly against abutting surfaces. Support edges by wall moldings.

3.06 INSTALLATION OF METAL PAN UNITS

A. Attach T-type bars to carrying channels; space 24 in. o.c. and secure with clips at each channel. Install metal pan acoustic tile to form the pattern shown. Secure tile to the concealed suspension system in the manner recommended by the manufacturer. Provide positive support for the tile and set faces to an accurate plane. Align joints in adjacent units and maintain straight joint lines both ways for the full area of the ceiling.

B. Install wall moldings continuously where tile abuts other material and at wall intersections where tile terminates, except as otherwise detailed. Align moldings accurately and fasten securely to construction.

3.07 CLEANING AND PROTECTION

A. Clean and repair surfaces that have been stained, marred, or otherwise damaged.

B. Protect acoustical ceilings during the construction period so that they will be without any indication of deterioration or damage at the time of acceptance by the Owner.

* * *

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S U P P L E M E N T A R Y M E M O R A N D U M

To: Mr. R. Linn, Deputy Director for Physical Facilities, WT&ED
From: Arthur P. Coras
Date: November 28, 1988
Subject: WTC - ALTERATION APPLICATION #W-7004 - SALOMON BROTHERS - 7 WTC - BASE BUILDING MODIFICATIONS

Reference: 1. Memorandum, Coras/Linn, dated November 2, 1988
2. Letter, Sanchez/Fernandez, dated November 16, 1988

Copy To: L. Sanchez
A. Vaccaro
Job Folder
Chrono Folder

REMARKS: This memorandum is supplementary to reference number 1.

The status of the drawings listed in reference number 2 is as follows:

1. Recommended for approval (Submitted with review request dated 10/18/88):

DWG. NO.	DATE	REV. NO.	TITLE
S-4	10/17/88	-	7th to 29th Fl. Framing Plan
S-5	10/17/88	-	30th Fl. Framing Plan
S-6	10/17/88	-	31st Fl. Framing Plan
S-7	10/17/88	-	32nd Fl. Framing Plan
S-8	10/17/88	-	33rd Fl. Framing Plan
S-9	10/17/88	-	34th Fl. Framing Plan
S-10	10/17/88	-	35th Fl. Framing Plan
S-32	10/17/88	-	Typical Superstructure Details and General Notes
S-33	10/17/88	-	Typical Superstructure Details
S-34	10/17/88	-	Superstructure Sections

2. Submitted with review request dated November 16, 1988, and currently under review:

DWG. NO.	DATE	REV. NO.	TITLE
S-11	11/07/88	1	36th Fl. Framing Plan
S-12	11/07/88	1	37th Fl. Framing Plan
S-13	11/07/88	1	38th Fl. Framing Plan
S-14	11/07/88	1	39th Fl. Framing Plan
S-15	11/07/88	1	40th Fl. Framing Plan
S-16	11/07/88	1	41st Fl. Framing Plan
S-17	11/07/88	1	42nd Fl. Framing Plan
S-18	11/07/88	1	43rd Fl. Framing Plan
S-19	11/07/88	1	44th Fl. Framing Plan

Arthur P. Coras, P.E.
Manager
Quality Assurance Division

PSC/dm

20

Emery Roth & Sons, P.C.
Architects

845 Third Avenue
York, New York 10022
Phone: 212. 753. 1733
971836 EM/ROTH/NYK
Telecopier: 212. 752 8695

Richard Roth, Sr., FAIA
Richard Roth, Jr., FAIA, RIBA
Robert Sobel, AIA

Philip Martines

Alan G. Cherry, FA
Roy S. Gee, AIA
Sal Orlando
John J. Secreto, Jr.

Terrence Casnen
Gopal Y. Dandekar
Fred Halden
Gelal Kent, AIA

November 5, 1987

Mr. Stanley Johnson
The Port Authority of NY & NJ
World Trade & Economic Development
One World Trade Center
New York, New York 10048

RE: Seven World Trade Center/
Port Authority Comments for Auditorium

Dear Stanley:

The following is a response to previous Port Authority comments (attached) in regard to the auditorium for Seven World Trade Center.

We trust these answers will suffice for our client, Silverstein Properties, to obtain a complete building approval.

If you have any questions, please contact the writer.

Sincerely,

EMERY ROTH & SONS, P.C.

STEVE STENOS

cc: Arthur Miller
Harold Jupiter

SS:fh

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W-01437 (49)
ALTERATION APPLICATION

Emery Roth & Sons, P.C.
Architects

November 5, 1987

Comment 6:

See drawings #5, 6 and 7.

Comment 7:

The capacity for Stair #2 is 150 persons (2½ units). The exit capacity for Stair #5 is 160 (2 units - 80 persons per unit width - see table 8-1). 100 persons can exit through Stair #5 - see C26-801.10(d). The 4'-8" door (2½ units) has a capacity of 250 persons as per table 6-1.

Comment 8A:

The occupancy classification is F1-b. The anticipated occupant load is 350 persons. The exit capacity can accommodate 420 persons.

Comment 8B:

The intended use of the space will be primarily for lectures and presentations. There will be no scenic elements on the stage as per C26-307.2(b).

Comment 9A: (Attached)

Comment 9B:

The code as per C26-801.11 states: "Safe areas shall be at a level not more than 6 feet above or below the level at which egress is made from the assembly space,...". The required safe area has been provided at the same floor elevation as the assembly space. The safe area has been further extended to the third floor level by an open stair. (See section C26-801.14(c)). There is no mention in the code as to how far from grade an assembly space can be.

In reference to the comment of egress through an atrium the code under sub-article 720.0 - atriums, section C26-720.5(c) states: "An unenclosed path of travel to a required exit shall be permitted,...". Means of egress directly to the exterior is provided by way of the Plaza and Bridge. The swing doors and revolving doors can accommodate more persons than required by code. See egress drawings.

Comment 10:

See latest architectural drawings.

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Cooper

THE PORT AUTHORITY OF NY & NJ

The World Trade Center
One World Trade Center
New York, New York 10048

April 14, 1988

Mr. Harold Jupiter
Vice-President, Construction
Silverstein Development Corporation
521 Fifth Avenue
New York, New York 10175

Re: 7 WORLD TRADE CENTER - Auditorium and Vesey Street Escalators

Dear Harold:

This will confirm my telephone conversation with you in which I indicated that the final review of the below listed items is underway by the responsible Port Authority review groups.

1. The Auditorium - Data prepared by Emery Roth & Sons (your Architectural Consultant) in answer to questions raised by the Tenant Review Unit concerning Code interpretation of your Auditorium design.

2. Structural drawings and calculations prepared by L. Robertson and Associates (Structural Consultants) for two (2) new escalators to be installed adjacent to Vesey Street over Stair PL-7.

3. Emery Roth & Sons Drawing Nos. 50, revised 3/25/88, 51 and 56, revised 2/18/88, for the ceiling to be constructed over the Barclay Street Ramp.

The escalators will not be permitted to become operational until you receive approval from the Port Authority for Item #2 above. You are hereby requested to install an electric meter at the service center feeding these escalators. Mr. Gene Daly of this office is available to answer questions from your Electrical Consultant concerning this item. He can be reached at 466-2716.

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THE PORT AUTHORITY OF NY & NJ Memorandum

W-01437

Refer To	Date	Noted By	Date
Return To		File	

To: Mr. Arthur P. Coras, Manager, Quality Assurance Division
From: Stanley L. Johnson
Date: April 14, 1988
Subject: 7 WORLD TRADE CENTER - Job No. 701.437 - Design Drawings

Reference: Memorandum - A. Coras/R. Linn, dated June 29, 1987

Copy To: Messrs. P. Cooper (w/att), J. Duncan (w/att), L. Feld (w/att), R. Linn, P. Marchese, A. Simmons, A. Vaccaro (w/att)

This is to confirm transmittal to your staff of the following:

1. a) Letter - Emery Roth & Sons/S. Johnson, dated November 5, 1987

   b) Three (3) sets of marked-up Emery Roth & Sons Drawing Nos. 6, 7 and 8.

2. Leslie E. Robertson & Associates' Structural drawings and calculations (145 pages) for the new escalators to be installed over Stair PL-7.

3. Emery Roth & Sons Drawing Nos. 51 and 56, dated revised 2/18/88
   Emery Roth & Sons Drawing No. 50, dated revised 3/25/88
   (Ceiling Details above Barclay Street Ramp).

Item No. 1 above is intended as an answer to the open comments listed in your referenced memorandum concerning the Auditorium. In addition, it is requested that a final review be conducted concerning the structural design for the two (2) new escalators for Stair PL-7 (south side of Vesey Street) (Item #2) and for the ceiling design shown to be constructed over the Barclay Street Ramp (Item #3).

Please note that all other work for 7 World Trade Center has been previously approved by you.

If you have any questions concerning the above, I am available on 466-4242.

Stanley L. Johnson
Project Administrator
WTC Planning Division

/gem

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nosing, and, except as provided in paragraph d of this subdivision, the sum of two risers plus the width of one tread shall be at least twenty-four inches but not more than twenty-five and one-half inches.

d. No change in levels shall have less than three risers, except that where the intervening tread is between twenty-eight inches and thirty-six inches, two risers may be used when the edge of each tread is marked by a contrasting color stripe.

e. Where exit openings from an assembly space are above or below the level of the safe area, a platform shall be provided at the same level as that of the exit opening. The platform shall be at least one foot wider on each side than the exit opening, and shall extend a minimum of six feet in the direction of exit travel. The sides of such platforms, and of steps or ramps leading from them, shall be protected by guards at least three feet high.

(6) EXITS FROM SAFE AREAS. The capacity of exits from safe areas shall be as listed in table 8-1. Exit openings from safe areas shall discharge into exit types as provided in subchapter six of this chapter.

(7) DOOR HARDWARE. Doors from safe areas or from exits from safe areas opening directly to the outdoors and furnished with locks shall be equipped with fire exit bolts complying with the requirements of paragraph two of subdivision (k) of section 27-371 of subchapter six of this chapter.

§ 27-536*(C26-801.12)* **Corridors.** Corridors shall comply with all of the requirements of subchapter six of this chapter, except as modified below:

(a) Capacity. The capacity of corridors shall be as listed in table 8-1.

(b) Changes in level. Changes in level requiring less than three risers in a corridor shall be by a ramp having a slope not greater than one in ten.

§ 27-537*(C26-801.13)* **Exit passageways.** Exit passageways shall comply with all of the requirements of subchapter six of this chapter, except as modified below:

(a) Capacity. The capacity of exit passageways shall be as listed in table 8-1.

(b) Changes in level. Changes in level requiring less than three risers in an exit passageway shall be by a ramp having a slope not greater than one in ten.

§ 27-538*(C26-801.14)* **Vertical exits.** Stairs, escalators and ramps shall comply with all of the requirements of subchapter six of this chapter, except as modified below:

(a) Capacity. The capacity of stairs, escalators or ramps shall be as listed in table 8-1.

(b) Width. The minimum width of stairs shall be at least forty-four inches, except that where the total occupant load is not more than permitted for one unit of exit width, the minimum width may be thirty-six inches.

(c) Unenclosed vertical exits. Vertical exits leading directly from one safe area to another, or leading from a safe area directly to an open exterior space, need not be enclosed.

(d) Ramp slope. Ramps serving as vertical exits shall not have a slope greater than one in ten.

§ 27-539*(C26-801.15)* **Open exterior spaces.** (a) Capacity. Open exterior spaces shall be adequate in width and area to accommodate the accumulated occupant load of all exits discharging into them on the basis of two square feet per person.

(b) Minimum dimensions. The minimum dimensions of open exterior spaces shall be twenty feet, except that when the principal entrance to the place of assembly is from an open exterior space, the minimum dimension of this space shall be thirty feet. No open exterior space shall have less than four hundred square feet of floor area, and floor area shall be measured exclusive of the following:

1. The area immediately outside any exit door from the place of assembly for a distance perpendicular to the exit doors of ten feet for the full width of the exit opening.
2. The area of steps, platforms, stairs, or ramps within or leading to or from the space.
3. The area of obstructions such as shrubs, trees, fixed furniture, signs, sculptures, pools, and similar obstructions to occupancy or exit travel.

*** TABLE 8-1 DETERMINATION OF EXIT AND ACCESS REQUIREMENTS**

Occupancy Group Classification	Maximum Travel Distance Within Assembly Space (ft.)[a]		Capacity (number of persons per unit of width)				
	Primary	Secondary	Aisle and Cross Aisle[e]	Doors or Openings: From Assembly Space	Doors or Openings: From Safe Area	Stairs and Escalators	Ramps, Corridors, Safe Areas, Exit Passageways
F-1a[b]	85	125	80	50	100	60	80
F-1b[c]	100	125	90	80	125	80	100
F-2	175	250	400	400	500	320	425
F-3	100[d]	125[d]	90	80	125	80	100
F-4	85[d]	125[d]	80	50	100	60	80

Notes:

[a] See section 27-533. When an exit opening from an assembly space discharges into corridor that does not meet the requirements of this code for a safe area, the travel distance shall include the distance within the corridor to an exit.

[b] See paragraph four of subdivision (b) of section 27-546 for stages.

[c] See paragraph three of subdivision (b) of section 27-547 for stages.

[d] In places of assembly completely equipped with automatic sprinklers, this distance may be increased by fifty percent.

[e] See section 27-532.

(c) Above or below grade. When an open exterior space is more than fifteen feet above or below the grade of the street or public space to which it discharges, its required area shall be increased by one-third.

(d) Egress from open exterior spaces. Exterior exit passageways, ramps, or steps leading from open exterior spaces shall be not less in width than required for the occupant load of all exits discharging into the open exterior space. The width of such exit passageways shall be based on the capacities listed in table 8-1, but in no case less than ten feet. Ramps and steps shall comply with the requirements of paragraph e of subdivision five of section 27-535 of this article.

§ 27-540*(C26-801.16)* **Exit lighting.** In addition to the requirements of subchapter six of this chapter, lighting shall be provided in the following areas:

(a) Safe areas. Safe areas shall be artificially lighted by electrical means at all times during occupancy of a place of assembly so as to provide illumination of at least five foot candles at the level of the floor and on the surface of all stairs, steps, ramps, and escalators within the safe area.

(b) Open exterior spaces. Yards or courts which serve as open exterior spaces shall be artificially lighted by electrical means at all times between sunset and sunrise during occupancy of a place of assembly so as to provide illumination of at least five foot candles at the level of the floor over at least the required area.

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*L. 1986, chap. 839, eff. 9/1/86.

PA 36
9-75

THE PORT AUTHORITY OF NY & NJ

To R. E. Linn Room No.

From: **Thomas F. Donovan** / Room 63S / Ext. 8349

Date 11 / 16 / 88 cc: P.Marchese, L. Sanchez

Here is a revised letter from Salomon setting forth the anticipated plan submission schedule for finishing work in 7 WTC.

Unless I hear from you to the contrary, we will agree with Salomon that a submission schedule generally in accordance with the number of floors and the timetable set forth in Manuel Fernandez' letter is acceptable.

T.F.D.

/mf

Att.

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NOV 1 6 1988

PORT AUTHORITY N.Y. & N.J.
WORLD TRADE DEPT.

Member of the New York Stock Exchange, Inc.

One New York Plaza
New York, N.Y. 10004 (212) 747-7000

Salomon Brothers Inc

November 15, 1988

Mr. Tom Donovan
General Manager - Development and Rentals Division
Port Authority of New York and New Jersey
1 World Trade Center - 63 South
New York, NY 10048

Re: Salomon Brothers at 7 WTC -
Revised Schedule for Filing SBI Tenant Construction Documents with the Port Authority

Dear Tom:

In response to our 11/14/88 proposed schedule for filing our Tenant Construction Documents, you requested today that we split-up the two packages that would have consisted of seven floors each. Below please find revised groupings of floors that we propose to file between January 1989 and August 1989 in the sequence given:

1. Floors 35, 44
2. Floors 40, 41, 42, 43
3. Floors 2, 3, 4
4. Floors 34, 38, 39, 45
5. Floors 1, 5, 6
6. Floors 36, 37, 46, 47
7. Floors 29, 30, 31, 32, 33

We are unable at this time to pinpoint the exact dates for each of the packages, but they will be issued approximately one month apart.

If you have any questions, please let us know.

Sincerely,

Manuel Fernandez

Manuel Fernandez
Vice President

cc: W. Mathison
D. Sullivan
B. Gale
L. Cherkis
R. White/File (7-8800-00 & 7-8800-02.009.0)

PA 35
9-75

THE PORT AUTHORITY OF NY & NJ

To Art Coras Room No. 51N

From: Robert J. Linn / Room 63W / Ext. 3581

Date 11 / 17 / 88

SUBJ: SALOMON BROTHERS - 7 WORLD TRADE CENTER - SUBMITTAL OF TAA's

cc: P. Cooper, T. Donovan, P. Marchese, L. Sanchez

Attached is a buckslip, Donovan/Linn, 11/16/88, transmitting a letter Fernandez/Donovan, 11/15/88, outlining seven (7) submissions that Salomon Brothers plans to submit between January 1989 and August 1989. Mr. Donovan has advised me that Salomon will make these submissions at a minimum of 30 days apart. Exact dates for the seven (7) submissions are not known at this time. When dates are established, you will be so advised.

R.J.L.

NOTE: TO TCRU SALOMON TEAM:
THIS SCHEDULE IS FOR TENANT FINISH WORK.
PJC

THE PORT AUTHORITY OF N Y & N.J.
ENGINEERING DEPT., QUALITY ASSURANCE DIV
TENANT CONSTRUCTION REVIEW UNIT

NOV 21 1988

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NOTED: PJC 21NOV
REFERRED TO:

(W-7004)

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11/16

BUCKSLIP

TO: Paul Cooper, TCRU
FROM: L. Sanchez
DATE: November 15, 1988
SUBJECT: THE WTC - 1 WTC - SALOMON BROTHERS INC. - WT-004 - BASE BUILDING MODIFICATIONS
REFERENCE: 1) Memo: A. Coras/R. Linn, dated October 31, 1988
2) Letter: M. Fernandez (SB1)/L. Sanchez, dated November 9, 1988

COPY TO: Messrs. T. Donovan, V. Dovletian, R. Linn, P. Marchese, L. Menno, E. McNierney

Attached, per Reference 2, is a detailed response from Mr. M. Fernandez to the comments listed in Reference 1. These responses were prepared by Skidmore, Owings and Merrill, dated NOvember 4, 1988 and address the Twenty - three items listed by TCRU.

Please call if you have any questions.

Luciano Sanchez
WTC Planning Division

E.McN/kj

office copy

NOV 16 1988

W-700 # (4)

APPLICATI

This was recorded as Subm. #4.
G.B. 11/30/88.

Member of the New York Stock Exchange, Inc

One New York Plaza
New York, N.Y. 10004 (212) 747-7000

Salomon Brothers Inc

November 9, 1988

Mr. Luciano Sanchez
World Trade Center Planning Division
1 World Trade Center, Suite 62 East
New York, NY 10048

Re: 7 World Trade Center -
SBI Tenant Alteration Application #W-7004, Filed 10/17/88

Dear Lou:

Attached please find SOM's 11/4/88 letter with a detailed response to the Port Authority's (unreleased) 10/31/88 memo from A. Coras to R. Linn. On 11/7/88 SOM sent you certain plans with additional information requested by your plan reviewers (please refer to attached listing).

We hope that with these responses our 10/17/88 package can be approved for construction.

If you have any questions on this matter, please do not hesitate to ask.

Sincerely,

Manuel Fernandez

Manuel Fernandez
Vice President

atts.

cc: W. Mathison
D. Sullivan
B. Gale
L. Cherkis
R. White/File (7-8800-00 & 7-8800-02.000.10)

SOM

Ref. No. 6234-0008

November 4, 1988

RECEIVED
NOV 08 1988

Mr. Manuel Fernandez
Salomon Brothers Inc.
Two New York Plaza, 34th Fl.
New York, NY 10004

Project: 7 World Trade Center
Subject: Answers to Port Authority

Dear Manuel:

Enclosed are "item by item" answers to Port Authority unreleased memorandum from Arthur P. Coras dated October 31, 1988.

We have addressed all the items despite the fact that most of the questions are not relative to the October 17, 1988 package issued to the Port Authority. The October 17, 1988 issue dealt with floors 7 through 35.

Very truly yours,

SKIDMORE, OWINGS & MERRILL

Warren J. Mathison
Associate Partner

WJM:ar

Enc.

4
NM
Q.L
2
NM

Skidmore, Owings & Merrill

220 East 42nd Street, New York, New York 10017
212 309-9500, Telex 620590

Item #		Answer
1.	a.	List of applicable codes and regulations are part of code analysis which will be issued to P.A. on 11/7/88.
	b.	Will be pulled out of code analysis and incorporated into title sheet which will be issued to P.A. on 11/7/88.
2.		BSA and MEA numbers will be attached to systems as they are issued.
3.	a.	This was part of the descriptive narrative attached to Egress diagrams issued as part of "scope" drawings and will be reissued on 11/7/88.
	b.	We considered this a base building system which we followed.
	c.	The note "exit load up from below" on sketch SK-1006 refers to the load coming up from the 2nd floor auditorium. In addition to this, there is a new stair in the N.E. corner carrying 150 persons down from the 4th floor.
4.		Travel distances are in the descriptive narrative attached to Egress diagrams issued as part of "scope" documents.
5.	a.	Designation for this type of space is not listed on table 6-2, therefore code (27-358.a) allows the architect to determine occupant load. This floor will be predominantly computer equipment with very few occupants (25 max.).
	b.	Floor loading shown on Egress diagrams and sections issued as part of "scope" drawings
6.		Travel distances are in descriptive narrative attached to Egress diagrams issued as part of "scope" drawings.
7.		Special floors have Egress diagrams.We took for granted that the base building stairs were adequate for typical office use and did not refigure. However, stairs are good for 300 people. Our layout will not exceed 300 people.

8. a. It does(area of refuge - NYC code 27.374)

   b. Partition type and door ratings will be indicated on documents.

   c. Will be done on "tenant" documents.

9. Only passage elevator marked with asterisks will be raised as shown on drawings. "Tenant" drawings showing access floor extent will clarify why.

10. a. We are reusing base building toilets, fixtures, door, partitions, etc. which have been approved by P.A. and therefore considered legal.

    b. Same as above

    c. "posts" are drywall partition studs. Steel channel and saddle are size of door openings.

11 a. This will be confirmed when tenant specs for access floor is issued. Access floors throughout will be concrete filled metal pans. V.A.T. will be the finish in stairs.

   b. Details and plans on A-250 are coordinated with existing stairs.

   c. Depth of pan will be 2" minimum and shown on DWG A-250. Reinforcing will be indicated in concrete fill spec. to be issued 11/7/88.

12. The existing structure, is a composite of metal deck and concrete. The firestopping detail on DWG A.256 will be issued 11/7/88.

13. a. When we use the masonry partition it will have rating if required and firestopping detail will be included. This drawing was issued for the Drywall Partition details only at this time.

    b. see 13a.

14. The "Gat" clip number I have used was received from the manufacturer. I will change the number if you will give me the appropriate backup.

15. UPS Battery rooms will be identified on DWG. A-35 and issued 11/7/88.

16.thru 19 - The electrical system will be part of December 19, 1988 issue. The reason the electric closets were shown on this issue (floors 7-35) is for location of openings in slab and any structural reinforcing required.

20 No comment.

21 & 22 HVAC systems for Base Building Modifications will be part of the December 19, 1988 issue. The branch ductwork will be issued in the tenant packages.

23. Notes on DWG P-26 will be revised and reissued on 11/7/88.

Base Building Drawing Modifications
List of Drawings

Note: All Drawings Dated
7 Nov. '88

11/7/88
filing w. The
P.A. in
response to
"P.A. comments

A.

ARCHITECTURAL

T-1	Title Sheet
A-35	35th Floor Plan
A-250	Stair Details
A-256	Partition Details

STRUCTURAL

S-11	36th Floor Framing Plan
S-12	37th Floor Framing Plan
S-13	38th Floor Framing Plan
S-14	39th Floor Framing Plan
S-15	40th Floor Framing Plan
S-16	41st Floor Framing Plan
S-17	42nd Floor Framing Plan
S-18	43rd Floor Framing Plan
S-19	44th Floor Framing Plan

PLUMBING

P-26	26th Floor Plan (Similar For NON-SBI Floors 7-29)

SPECIFICATIONS

03300	Cast In Place Concrete and Cement Work
05100	Structural Steel
05300	Metal Decking
09440	Resin Matrix Flooring

MISC.

Code Analysis of 7 World Trade Center

Egress Diagrams SK - 1005, SK - 1010,
SK - 1012, SK - 1017

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
NOV 15 1988 (3)
W-7004
ALTERATION APPLICATION

SOLOMON BROTHERS - W 7004
DRAWING LIST
BASE BUILDING MODIFICATIONS

DRAWING NO	DATE	REVISED NO.	TITLE
T-1	November 7, 1988	--	Title Sheet
A. 35	" " "	1	35th. Floor Plan
A. 250	" 2, "	--	Stair Details
A. 256	" 11, "	1	Partition Details
S-11	" 7, "	1	36th. Floor Framing Plan
S-12	" " "	1	37th. " " "
S-13	" " "	1	38th. " " "
S-14	" " "	1	39th. " " "
S-15	Florence	1	40th. " " "
S-16		1	41st. " " "
S-17	As promised	1	42nd. " " "
S-18		1	43rd. " " "
S-19		1	44th. " " "
P-26	Ed McNerney	1	26th. Floor Plan Similar for Non - SBI Floors 7-29
A-36	------- --, ----	--	36th. Floor Plan
A-37	" " "		37th. " "
A-38	" " "	--	38th. " "
A-39	" " "	--	39th. " "
A-40	" " "	--	40th. " "
A-41	" " "	--	41st. " "
A-42	" " "	--	42nd. " "
A-43	" " "	--	43rd. " "
A-44	" " "	--	44th. " "
A-200	October 30, 1988	--	Misc. Base Building Modifications
A-218	October 31, 1988		Toilet Room Plan Details
A-250	" " "	--	Stair Details
A-255	" " "	--	Partition Schedule & Details
A-353	" " "	--	Toilet Room - R.F.C.
D-37		--	37th. Floor Demolition Plan
D-38	" " "	--	38th. " " Plan
D-39	" " "	--	39th. " " Plan
D-40	" " "	--	40th. " " Plan
D-41	" " "	--	41st. " " Plan
D-43	" " "	--	43rd. " " Plan

D-44	"	"	"	--	44th. " "
S-11 to S-19	"	"	"	--	Superseded by Issue of November 7, 1988
S-32	"	"	"	--	Typical Superstructure Details & General Notes
S-33	"	"	"	--	Typical Superstructure Details
S-34	"	"	"	--	Superstructure Sections
P-36	"	"	"	--	36th. Floor Plan
P-37	"	"	"	--	37th. " "
P-38	"	"	"	--	38th. " " (Typical to 40th. & 42nd. Floor)
P-39	"	"	"	--	39th. Floor Plan
P-41	"	"	"	--	41st. " "
P-43	"	"	"	--	43rd. " "
P-44	"	"	"	--	44th. " "
D-1P	"	"	"	2	Typical Trading Floor
D-2P	"	"	"	2	Plan (38th. - 43rd. Floor)
D-44P	"	"	"		44th. Floor Demolition Plan
HVAC-38	"	"	"	--	37th. Floor Plan (Typical for 36th. Floor)
HVAC-39	"	"	"	--	39th. Floor Plan
HVAC-42	"	"	"	--	42nd. " " (Typical for 40th. Floor)
HVAC-43	"	"	"	--	43rd. Floor Plan (Typical for 41st. Floor)
D-37H	"	"	"	--	37th. Floor Demolition Plan 36th. Floor SIM.
D-38H	"	"	"	2	38th. Floor Demolition Plan & 39th. Thru 44th. Floor SIM.
E-36	"	"	"	1	36th. & 37th Floors Electrical Plan
D-36E	"	"	"	1	36th. & 37th. Floors Electrical Plan
E-38	"	"	"	1	38th. Floor Electrical
D-38E	"	"	"	1	" " " Demolition Plan
E-39	"	"	"	1	39th., 41st., & 43rd. Floors
D-39E	"	"	"	1	Electrical Demolition Plan
E-40	"	"	"	1	40th. & 42nd. Floors - Electrical Demolition Plan
D-40E	"	"	"	1	40th. & 42nd. Floors - Electrical Demolition Plan
E-44	"	"	"	1	44th. Floor Electrical Demolition Plan
D-44E	"	"	"	1	44th. Floor Electrical Demolition Plan

D-1E	"	"	"	3	Electrical Riser
E-R1	"	"	"	2	Standby Power & UPS Riser
C-36.1	"	"	"	--	36th. Floor Base Building Communications - Floor Plan
C-37.1	"	"	"	--	37th. Floor Base Building Communications - Floor Plan
C-38.1	"	"	"	--	38th. Floor Base Building Communications - Floor Plan
C-39.1	"	"	"	--	39th. Floor Base Building Communications - Floor Plan
C-40.1	"	"	"	--	40th. Floor Base Building Communications - Floor Plan
C-41.1	"	"	"	--	41st. Floor Base Building Communications - Floor Plan
C-42.1	"	"	"	--	42nd. Floor Base Building Communications - Floor Plan
C-43.1	"	"	"	--	43rd. Floor Base Building Communications - Floor Plan
C-44.1	"	"	"	--	44th. Floor Base Building Communications - Floor Plan

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
NOV 15 1988 (3)
W-7004
ALTERATION APPLICATION

Member of the New York Stock Exchange, Inc

One New York Plaza
New York, N.Y. 10004 (212) 747-7000

Salomon Brothers Inc

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
NOV 15 1988
W-7004
ALTERATION APPLICATION

November 9, 1988

Mr. Luciano Sanchez
World Trade Center Planning Division
1 World Trade Center, Suite 62 East
New York, NY 10048

Re: 7 World Trade Center -
SBI Tenant Alteration Application #W-7004, Filed 10/17/88

Dear Lou:

Attached please find SOM's 11/4/88 letter with a detailed response to the Port Authority's (unreleased) 10/31/88 memo from A. Coras to R. Linn. On 11/7/88 SOM sent you certain plans with additional information requested by your plan reviewers (please refer to attached listing).

We hope that with these responses our 10/17/88 package can be approved for construction.

If you have any questions on this matter, please do not hesitate to ask.

Sincerely,

Manuel Fernandez

Manuel Fernandez
Vice President

atts.

cc: W. Mathison
D. Sullivan
B. Gale
L. Cherkis
R. White/File (7-8800-00 & 7-8800-02.000.10)

SOM

Ref. No. 6234-0008

November 4, 1988

RECEIVED
NOV 08 1988
PROPERTIES MGMT

Mr. Manuel Fernandez
Salomon Brothers Inc.
Two New York Plaza, 34th Fl.
New York, NY 10004

Project: 7 World Trade Center
Subject: Answers to Port Authority

Dear Manuel:

Enclosed are "item by item" answers to Port Authority unreleased memorandum from Arthur P. Coras dated October 31, 1988.

We have addressed all the items despite the fact that most of the questions are not relative to the October 17, 1988 package issued to the Port Authority. The October 17, 1988 issue dealt with floors 7 through 35.

Very truly yours,

SKIDMORE, OWINGS & MERRILL

Warren J. Mathison
Associate Partner

WJM:ar

Enc.

Skidmore, Owings & Merrill

220 East 42nd Street, New York, New York 10017
212 309-9500, Telex 620590

	Item #		Answer
	1.	a. ✓	List of applicable codes and regulations are part of code analysis which will be issued to P.A. on 11/7/88.
		b. ✓	Will be pulled out of code analysis and incorporated into title sheet which will be issued to P.A. on 11/7/88.
M.R.C.	2.		BSA and MEA numbers will be attached to systems as they are issued.
✓	3.	a.	This was part of the descriptive narrative attached to Egress diagrams issued as part of "scope" drawings and will be reissued on 11/7/88.
✓		b.	We considered this a base building system which we followed.
✓		c.	The note "exit load up from below" on sketch SK-1006 refers to the load coming up from the 2nd floor auditorium. In addition to this, there is a new stair in the N.E. corner carrying 150 persons down from the 4th floor.
✓	4.		Travel distances are in the descriptive narrative attached to Egress diagrams issued as part of "scope" documents.
M.R.C. (E-occup. to be applicable) (VAD to review)	5.	a.	Designation for <u>this</u> type of space is not listed on table 6-2, therefore code (27-358.a) allows the architect to determine occupant load. This floor will be predominantly computer equipment with very few occupants (25 max.).
	✓	b.	Floor loading shown on Egress diagrams and sections issued as part of "scope" drawings.
Approval of Egress [illegible] type of [illegible]	6.		Travel distances are in descriptive narrative attached to Egress diagrams issued as part of "scope" drawings.
	✓ 7.		Special floors have Egress diagrams.We took for granted that the base building stairs were adequate for typical office use and did not refigure. However, stairs are good for 300 people. Our layout will not exceed 300 people.

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To review with V.A.T. 10. a. We are reusing base building toilets, fixtures, door, partitions, etc. which have been approved by P.A. and therefore considered legal.

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✓ b. Details and plans on A-250 are coordinated with existing stairs.

✓ c. Depth of pan will be 2" minimum and shown on DWG A-250. Reinforcing will be indicated in concrete fill spec. to be issued 11/7/88.

✓ 12. The existing structure, is a composite of metal deck and concrete. The firestopping detail on DWG A.256 will be issued 11/7/88.

✓ 13. a. When we use the masonry partition it will have rating if required and firestopping detail will be included. This drawing was issued for the Drywall Partition details only at this time.

✓ b. see 13a.

12-28-88 rec. 14. The "Gat" clip number I have used was received from the manufacturer. I will change the number if you will give me the appropriate backup.

12-28-88 ?

review w/ V.A.T. ? 15. UPS Battery rooms will be identified on DWG. A-35 and issued 11/7/88.

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20 No comment.

21 & 22 HVAC systems for Base Building Modifications will be part of the December 19, 1988 issue. The branch ductwork will be issued in the tenant packages.

23. Notes on DWG P-26 will be revised and reissued on 11/7/88.

Base Building Drawing Modifications
List of Drawings

Note: All Drawings Dated
7 Nov. '88

11/7/88
filing w. the
P.A. in
response to
"P.A. comments"

A.

ARCHITECTURAL

T-1	Title Sheet
A-35	35th Floor Plan
A-250	Stair Details
A-256	Partition Details

STRUCTURAL

S-11	36th Floor Framing Plan
S-12	37th Floor Framing Plan
S-13	38th Floor Framing Plan
S-14	39th Floor Framing Plan
S-15	40th Floor Framing Plan
S-16	41st Floor Framing Plan
S-17	42nd Floor Framing Plan
S-18	43rd Floor Framing Plan
S-19	44th Floor Framing Plan

PLUMBING

P-26	26th Floor Plan (Similar For NON-SBI Floors 7-29)

SPECIFICATIONS

03300	Cast In Place Concrete and Cement Work
05100	Structural Steel
05300	Metal Decking
09440	Resin Matrix Flooring

MISC.

Code Analysis of 7 World Trade Center

Egress Diagrams SK - 1005, SK - 1010,
SK - 1012, SK - 1017

1.7

THE PORT AUTHORITY OF NY & NJ Memorandum

Refer To	Date	Noted By	Date
Return To		File	

To: Arthur Coras, Manager, Quality Assurance Division
From: Luciano Sanchez
Date: November 10, 1988
Subject: THE WORLD TRADE CENTERS - SALOMON BROTHERS INC. - LEASE WT-2305 - TCA #7004 - CONTRACT WTC 597.004 - REVIEW OF CONTRACT DRAWINGS - BASE BUILDING MODIFICATIONS
Reference: Transmittal of drawings, dated November 7, 1988
Copy To: Messrs. P. Cooper, T. Donovan, R. Linn, P. Marchese, L. Menno, E. McNierney, A. Vaccaro*

You are requested to review the drawings and specifications delivered to your office on November 9, 1988 for New York City Building Code compliance, construction details and specifications, as they apply to 7 World Trade Center.

This work will be performed under a Tenant Construction Application and consist of Mechanical, Electrical, Plumbing, Fire Protection and Vertical Transportation Modifications to the subject premises. The estimate cost for this work is not available at the present time.

In addition, all persons copied with attachments of this memorandum are also requested to submit their comments by December 7, 1988.

Should you have any questions on this matter please contact me on 466-8566 or Mr. E. McNierney on 313-2257.

Luciano Sanchez
WTC Planning Division

E.McN/kj
* (w/att.)

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
NOV 14 1988 (3)
W-7004
ALTERATION APPLICATION

PA 90A
3-80

28

2127

TENANT ALTERATION REVIEW REQUEST

/	CHECK APPLICABLE ROUTING	ROOM NO.
	Engineering (Q.A.D.) (W13)	51E
	R. LINN - WTC-ED DEP DIR. PHYS.	63W
	P. MARCHESE - WT PLNG DIV.	62E
	L. SANCHEZ " " "	62E
	Control Desk " " " (W1)	62E
	N. CHENNISI " " "	62E
	E. DALY " " "	62E
	M. GLAVICIC " " " (W1)	62E
	C. SEMAN " " " (W1)	62E
	C. SERGE WT CONST. DIV. (W11)	3HN
	E. BOYCE WT OPER. (W1)	63N
	T. CANCELLIERE WT OPER. (W1)	82B
	Inspection & Safety (Eng. Audit) (W1)	#43
	R. BENACCHIO WT. OPER.	
	A. VACCARO WT CONST DIV.	3HN
	G. WENGER DEVELOPMENT DIV.	63S
	M. SINGLETON WT PLNG. DIV.	62E
	CENTRAL FILE	
	N. CHANFRAU RISK MANAGEMENT (W11)	#43

Description of Work:

REVIEW OF BASE BUILDING MODIFICATIONS - ARCH., ELEC., STRUCTURAL, HVAC, COMMUNICATIONS - CALCULATIONS, SPECS, CODE ANALYSIS & EGRESS SUMMARIES

FACILITY: 7 WTC

APPLICANT'S NAME: SALOMON BRO

APPLICATION NO.: W 7004

DRAWING NO(S).: * SEE ATTACHED L

CONTRACT NO.: WTC

DATE: NOV. 9, 19

☐ You are requested to review the attached application and forward your comments to: L. SANCH

☐ Attached are revised drawings. Please review only those items on which exception was previously ta and send your comments to:

829	62E	L. SANCHEZ	8566
Org. Unit	Room No.	Contact	Ext.

No later than: NOV. 23, 1988

L. Sanchez
Title EMCN for

If no reply is received by above date, your concurrence will be assumed unless arrangements have been made for additional time for review.

FOR USE OF REVIEWING DEPARTMENT

COMMENTS: (Use reverse side if necessary) Indicate next to each comment whether it is a condition or recommendation.

* DRAWING NOS.	TITLE	REV.	DATE

SEE ATTACHED SHEETS

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
office copy NOV 10 1988
W-7004 (3)
ALTERATION APPLICATION

NOTE: LETTER LINN TO CORAS TO FOLLOW.

(use check applicable box)

☐ Approved ☐ Approved with Conditions and Recommendations Noted Above ☐ Disapproved with Requirements for Approval Noted Above ☐ Disapproved for Reasons Noted Above

Signature	Title	Date

DRAWING LIST — BASE BUILDING MODIFICATIONS

(1)

DRAWING N°	DATE	REV. N°	TITLE
T-1	NOV. 7, 1988	—	TITLE SHEET
A-35	"	1	35TH FLOOR PLAN
A-250	NOV. 2, 1988	—	STAIR DETAILS
A-256	NOV. 11, 1988	1	PARTITION DETAILS
S-11	NOV. 7, 1988	1	36TH FLOOR FRAMING PLAN
S-12	"	1	37TH " "
S-13	"	1	38TH " "
S-14	"	1	39TH " "
S-15	"	1	40TH " "
S-16	"	1	41ST " "
S-17	"	1	42ND " "
S-18	"	1	43RD " "
S-19	"	1	44TH " "
P-26	NOV. 4, 1988	1	26TH FLOOR PLAN SIMILAR FOR NON-SBI FLOORS 7-29
A-36	OCT. 31, 1988	—	36TH FLOOR PLAN
A-37	"	—	37TH " "
A-38	"	—	38TH " "
A-39	"	—	39TH " "

TRANSMITTAL

SKIDMORE OWINGS & MERRILL

TO The Port Authority of NY&NJ
One World Trade Center
New York, NY 10048
Attn: Mr. L. Sanchez

RE Salomon Brothers Inc
7 WORLD TRADE CENTER
NEW YORK, NEW YORK 10048

WE ARE SENDING HEREWITH THE FOLLOWING
☑ DRAWINGS ☑ SPECIFICATIONS ☐ SHOP DRAWINGS SAMPLES

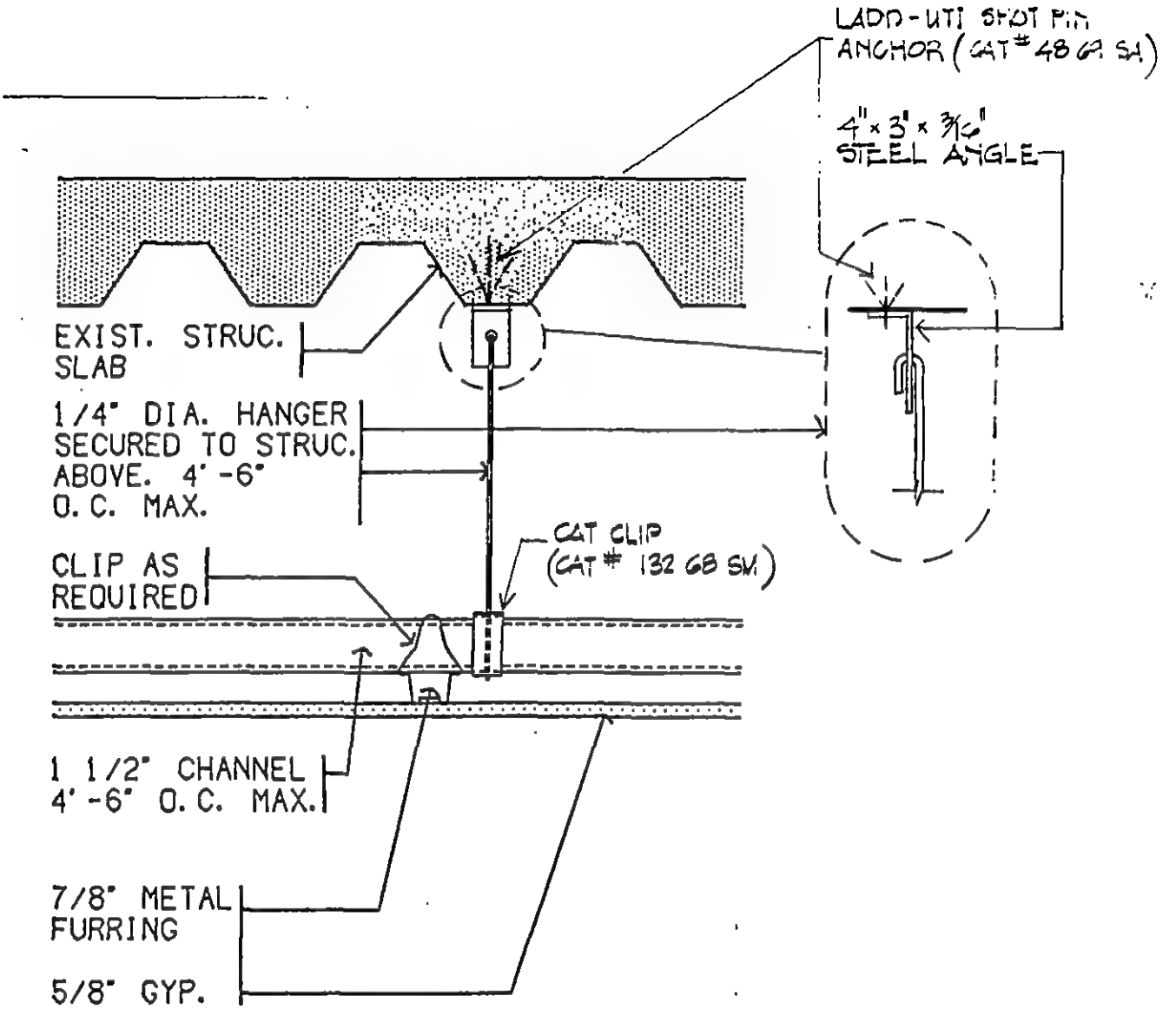
QUANTITY & TYPE	DESCRIPTION	DATE
11 Sets B&W:	Architectural, Structural, Communication, Mechanical Demolition, Electrical, and Plumbing Drawings. Floors 7-35 (Drawing List Attached) - 7 Nov '88	
11 Photocopies: (10 B&W)	Includes: Specifications & Structual Calculations Code Analysis, Egress Summaries	
-	Issued as Revision to 17, Oct '88 issue for Port Authority Approval of Base Building Modification for floors 7-35	

BY D. Montgomery DATE 11-7-88

☐ RECEIPT AND RETURN TO SOM REQUESTED x

CF 6234-200

COPIES TO Irwin Cantor - A. Tamboli 1 B&W, Photocopy
Morse Diesel - K. Skillings 1 B&W, 1 SEPIAS, Photocopy
E.S.A - R. Sumski 2 B&W, 2 Photocopy
S.B.I - M. Fernandez 1 B&W, Photocopy
J. Studley 1 B&W, Photocopy (D. Schnabel)
Silverstein 3 B&W, 3 photocopies (H. Jupitee)
S&H 3 Half size B&W, 3 photocopies
F&K - J. Beech 3 1/2 size B&W 3 photocopie
C. Muephy 1 Half size B&W X Photocopy
D. Sullivan 1 Half size B& Photocopy
B. Armstrong 1 Half size Photocop

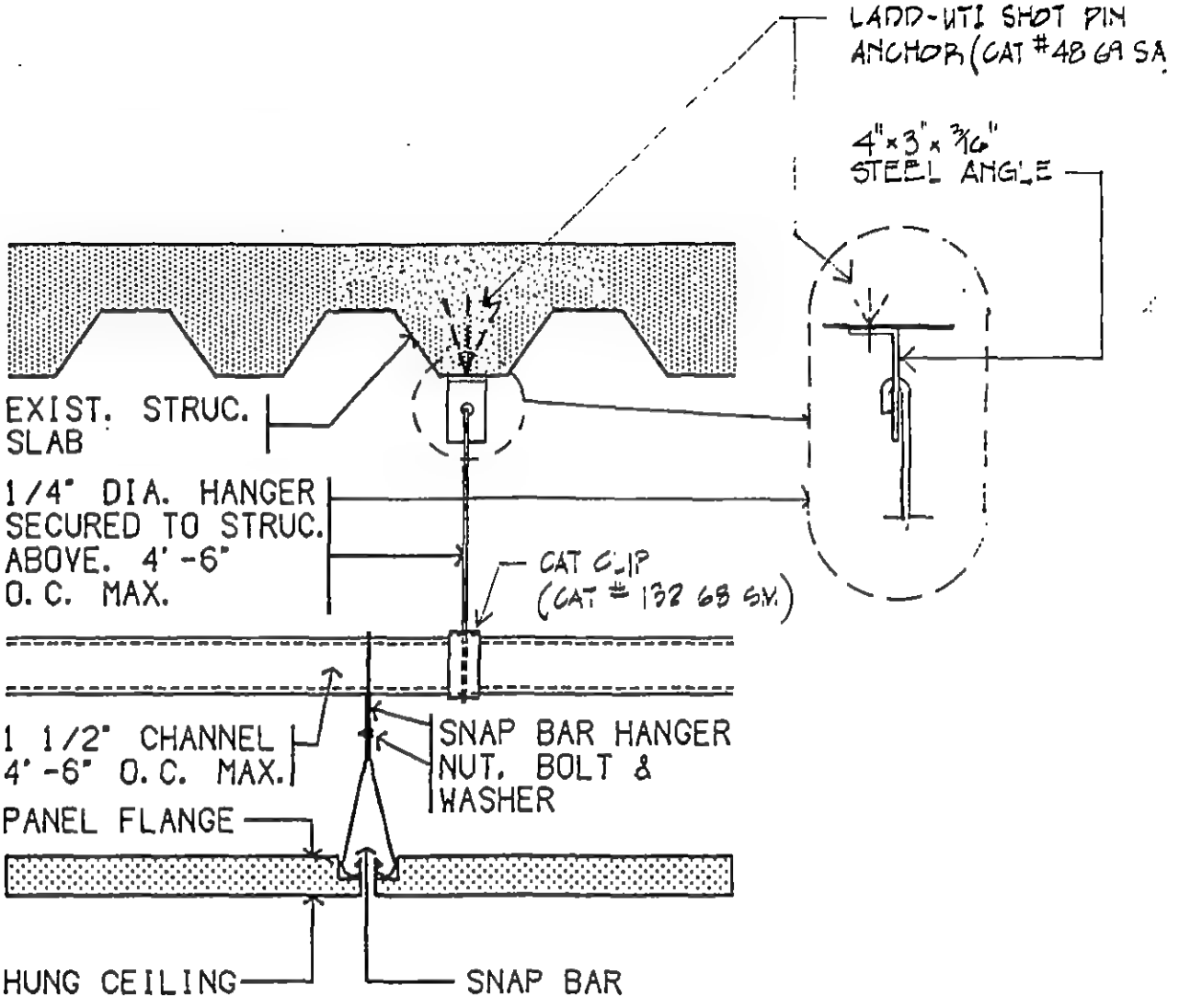


TYPICAL GYPSUM WALLBOARD CEILING

1'-9

N.T.S.

REVISED Oct 25, 88



TYPICAL METAL PAN CEILING DETAIL

N.T.S.

~~PRELIMINARY~~

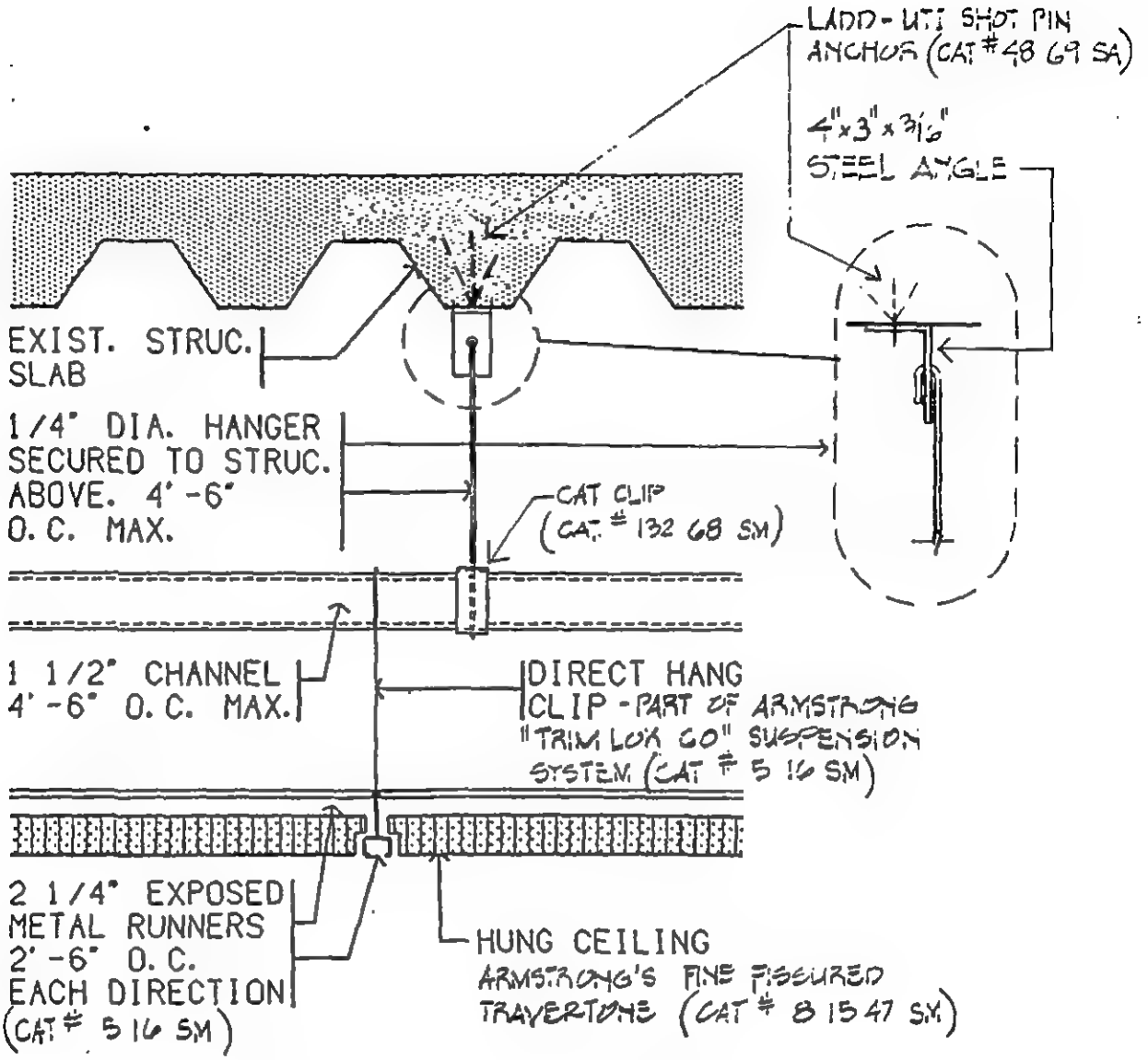
REVISED ... 5.33

E-40	"	1	40TH & 42ND FLRS - ELECTRICAL
D-40E	"	1	" " " " DEMOLITION PLAN
E-44	"	1	44 TH FLR. ELECTRICAL
D-44E	"	1	" " " DEMOLITION PLAN
D-1E	"	3	ELECTRICAL RISER.
E-R1	"	2	STANDBY POWER & UPS RISER
C-36.1	"	—	36 TH FLR. BASE BUILDING COMMUNICATIONS FLR. PL
C-37.1	"	—	37 TH " " " " "
C-38.1	"	—	38 TH " " " " "
C-39.1	"	—	39 TH " " " " "
C-40.1	"	—	40 TH " " " " "
C-41.1	"	—	41 ST " " " " "
C-42.1	"	—	42 ND " " " " "
C-43.1	"	—	43 RD " " " " "
C-44.1	"	—	44 TH " " " " "

P-36	"	—	36TH FLR. PLAN
P-37	"	—	37TH " "
P-38	"	—	38TH FLOOR PLAN (TYPICAL TO 40TH & 42ND FLR.
P-39	"	—	39TH FLOOR PLAN
P-41	"	—	41ST " "
P-43	"	—	43RD " "
P-44	"	—	44TH " "
D-1P	"	2	TYPICAL TRADING FLOOR PLAN (38TH - 43RD FLOOR)
D-2P	"	2	RISER DIAGRAMS
D-44P	"	—	44TH FLR. DEMOLITION PLAN
HVAC-37	"	—	37TH FLR. PLAN - (TYP. FOR 36T
HVAC-38	"	—	38TH FLR. PLAN
HVAC-39	"	—	39TH " "
HVAC-42	"	—	42ND " " (TYP. FOR 40TH
HVAC-43	"	—	43RD " " (TYP. FOR 41ST FL
HVAC-44	"	—	44TH " "
D-37H	"	—	37TH FLOOR DEMOLITION PLAN 36TH FLR. SIM.
D-38H	"	2	38TH FLOOR DEMOLITION PLAN & 39TH THRU 44TH FLR. SIM
E-36	"	1	36TH & 37TH FLRS. ELECTRICAL P
D-36E	"	1	" " " DEMOLITION PLAN
E-38	"	1	38TH FLR. ELECTRICAL
D-38E	"	1	" " " - DEMOLIT PLAN
E-39	"	1	39TH, 41ST & 43RD FLOORS - ELECTRICAL
D-39E	"	1	" " " " DEMOLITION PLAN

(2) (4)

A · 40	"	—	40 TH FLR. PLAN
A · 41	"	—	41 ST " "
A · 42	"	—	42 ND " "
A · 43	"	—	43 RD " "
A · 44	"	—	44 TH " "
A · 200	OCT. 30, 1988	—	MISC. BASE BUILDING MODIFICATION
A-218	OCT. 31, 1988	—	TOILET RM. PLAN DETAILS
~~A-250~~	" SUPERSEDED		~~STAIR DETAILS~~
A · 255	"	—	PARTITION SCHEDULE & DETAILS
A · 353	"	—	TOILET ROOM - R. F. C.
D-37			37 TH FLR. DEMOLITION PLAN 36 TH FLR. SIMILAR
D-38	"	—	38 TH FLR. DEMOLITION PLAN 40 TH & 42 ND FLR SIMILAR
D-39	"	—	39 TH FLR. DEMOLITION PLAN
D-41	"	—	41 ST FLR. " "
D-43	"	—	43 RD FLR. " "
D-44	"	—	44 TH FLR " "
~~[illegible]~~	"		
S-11 TO S-19	VOID - SUPERSEDED BY ISSUE OF NOV. 7, 19		
S · 32	10-31-88	—	TYPICAL SUPERSTRUCTURE DETAILS & GENERAL NOTES
S-33	"	—	TYPICAL SUPERSTRUCTURE DETAILS
S-34	"	—	SUPERSTRUCTURE - SECTIONS



TYP. HUNG CLG. DETAIL W/EXPOSED RUNNERS

N.T.S.

~~PRELIMINARY~~

REVISED 12-23-88

THE PORT AUTHORITY OF NEW YORK & NEW JERSEY

M E M O R A N D U M

To: Mr. R. Linn, Deputy Director for Physical Facilities, WT&ED
From: Arthur P. Coras
Date: November 2, 1988
Subject: WTC - ALTERATION APPLICATION #W-7004 - SALOMON BROTHERS - 7 WTC - BASE BUILDING MODIFICATIONS

Reference: Review Request dated 10/18/88

Copy To: L. Sanchez A. Vaccaro Job Folder
Chrono Folder

A review of the material submitted with the referenced request for the subject application has been made.

It is recommended that approval to proceed be withheld pending submission of the items indicated below being revised in accordance with the twenty-three (23) requirements listed on the attached rider.

REMARKS:

1. The comments of A. Coras/R. Linn memo dated 5/4/88 on W-01437, (copy attached), relevant to the current alteration application must be considered part of the attached rider.

2. In a meeting with the representatives of Salomon Brothers and their consultants on 11/2/88, it was established that responses to all but the structural comments of the attached Riders, including the base building mechanical and electrical work, the design of the electrical substation (which will be developed in conjunction with Con Edison), egress from the lower level places of assembly such as the 2nd floor auditorium and the 4th floor cafeteria, and the interior "tenant work", shall be submitted to the P.A. as part of future contract document packages. Based on the discussion of the comments contained in the rider(s) to this memo, we have no comments which would result in a recommendation to withhold approval for the structural work we have reviewed.

Arthur P. Coras, P.E.
Manager
Quality Assurance Division

JPV/dm
att.

RIDER

ALTERATION APPLICATION #V-7004

ARCHITECTURAL

*1. On a title sheet provide the following:

a) A list of applicable codes and regulations.

b) A list of construction items requiring controlled inspection, such as sprayed-on fire protection if required (N.Y.C. Building Code Section 27-324 (C26-502.2)(f)); firestopping (Code Section 27-345 (C26-504.7)(h).

*2. BS&A or MEA resolutions of approval are required for fire rated partitions, door assemblies and other opening protectives; for raised floors, acoustical ceiling tiles, combustible insulation material, firestopping material and combustible interior finishes. A copy of such resolution of approval shall be submitted for review. (Code Section 27-131 (C26-106.2)(a)).

*3. Dwgs. #SK-1005 and SK-1006, Second and Third Floor, Egress Analysis for Second Floor Auditorium:

a) Establish the occupancy classification of the Auditorium and the related exit capacities per unit of width.

b) Justify the use of a floor level (the Third Floor level) as a safe area where the floor level is located more than 6 feet above the auditorium level and thereby in conflict with N.Y.C. Building Code Section 27-535 (C26-801.11).

c) The Third Floor plan on SK-1006 shows in its NE corner a stair descending from the floor above, but according to a note is carrying "Exit Load up from below." Clarify.

*4. Dwg. #SK-1007, Fourth Floor - Egress Diagram. Identify the occupancy of the long space north of the core area. Clarify that egress from F-occupancy Dining Area complies with (Code Section 276-533 (C26-801.9) regarding primary and secondary travel distances and exit capacities.

5. Dwg. #SK-1008, 35th Floor - Egress Diagram:

a) Establish the total floor occupant load based on the appropriate occupant-floor area ratio from Code Table 6-2, and in accordance with Code Section 27-358 (C26-601.2) which requires the higher of the two possible occupant loads to be used in establishing the required exit capacity at a floor level.

b) Resolve the apparent conflict between the total occupant load, consisting of the occupant load of the 35th Floor and of the supplemental stair discharging at this floor level, and the available exit capacity of the two (2) existing stairs.

6. Dwg. #SK-1009, 39th Floor - Egress Diagram. Substantiate that egress and travel distances from the Auditorium comply with the limitations of Code Table 8-1 and of Code Section 27-533 (C26-801.9) regarding primary and secondary travel. Also clarify the access to the centrally located existing stair.

*7. An egress analysis shall be provided for each floor based on the larger of the two (2) possible occupant loads. The adequacy of the existing exit capacities and of travel distances to exits shall be established. (Code Section 27-358 (C26-601.2) and Table 6-1).

*8. Dwg. #A-35, 35th Floor. Regarding the new supplementary stair descending to, and terminating at, this floor level, the following is required:

a) The existing stair and the new stair discharging its occupant load into it shall be directly connected by an exit passageway conforming to the requirements of Code Sections 27-232 (C26-201.0) (Definitions), and 27-370 (C26-604.3).

b) The exit passageway requires a 2-hour fire rated enclosure, and only exit doors are permitted (Code Table 3-4 and Section 27-370 (C26-604.3)(f)).

c) Establish the requirements for EXIT and NO-EXIT signs and indicate their locations.

*9. Dwg. #A-35, 35th Floor Plan. According to Note #2 and triple asterisk at Passenger Elevators #P16 to P20, the floor is to be raised by 17 inches. Please clarify the extent of this raised floor and the effect of its height on the other elevators and on stairs, windows, doors and required ceiling spaces.

*10. Dwg. #A-200, Toilet Plan and Details:

a) At all similar toilet rooms the depth of at least one of the two entrance vestibules shall be increased to comply with the requirements of ANSI A117.1-1986 regarding physically handicapped persons.

b) Establish the depth of the toilet stalls. (ANSI A117.1-1986)

c) At Detail #5 establish size, spacing and anchoring of the indicated "steel channel posts" and the size and extent of the steel channel sill. (ANSI A117.1-1986)

11. Dwg. #A-250, Stair Details:

a) Provide information substantiating that all materials of raised

floors to be installed at stair landings are non-combustible and that the finish flooring has non-slip qualities.

b) Provide additional details clarifying the coordination of the new raised landing with existing stair conditions.

c) At Detail #2 clarify the depth and reinforcing of the concrete fill at intermediate landings. (Code Section 27-375 (C26-604.8)(h)).

12. Dwg. #A-255, Drywall Partition Details. At all head details clarify the type of the existing "structure" above. If a metal deck is used, indicate the required firestopping at voids over the partition.

13. Dwg. #A-255, Partition Detail #12:

a) Indicate if the masonry wall is to have a fire rating and if the "underside of structure" above consists of a metal deck, in which case the effect on the required firestopping between wall and the metal deck shall be indicated.

b) Verify if the steel angles' spacing is adequate for securing the firestopping in place, or if they require closer spacing or continuity. Also, indicate their anchoring.

14. Suspended Ceiling Specifications. At the three (3) ceiling detail sheets taken from Code Reference Standard RS 5-16, revise the Cat Clip number of the runner channel attachment to read: "Cat Clip 4B1.5L, CAT #131-68-SM."

STRUCTURAL

15. Dwg. #A-35. Revise the layout of the spaces in the north-west corner to conform with that used in the structural calculations, and identify the use of these spaces.

ELECTRICAL

16. Coordinate structural effects of large conductor runs (e.g., 40 sets of 4-500 MCM cables in 3 1/2-inch conduits, Dwg. #E-30) with the Structural Consultant so that they will be submitted with the structural calculations. N.Y.C. Building Code Section 27-554 (C26-901.2).

*17. Dwg. #E-R2 presents only a conceptual diagram of the service:

a) Submit plan drawings showing the locations of the service, switchboard room, entrance doors, network protector compartments, and transformer vaults, including details of the construction of the walls and doors of vaults and network protector compartments.

b) Submit short-circuit calculations and short-circuit ratings of buses, fuses, switches, and circuit breakers.

See N.Y.C. Electrical Code Sections 27-3048 (B30-44.1); 27-3045 (B30-43.0), 27-3047 (B30-44.0); 27-3272 (B30-246.0), 27-3274 (B30-248.0), 27-3275 (B30-249.0); Bulletin No. 102-1967 (Revised); NEC Sections 110-9, 110-10,, 110-16, 110-33.

18. Submit a one-line feeder diagram showing loads, feeder sizes, and overcurrent protective device trip ratings. N.Y.C. Electrical Code Sections 27-3174 (B30-157.0), 27-3093 (B30-82.0).

19. Dwg. #E-35. Show the Electric Room and give the dimensions for the switchboard and for access and working space. NEC Section 110-16(c); N.Y.C. Electrical Code Section 27-3127 (B30-115.0).

*20. Egress Diagram Sketches. Exit signs and exit lighting will be reviewed when submitted. N.Y.C. Building Code Sections 27-381 (C26-605.1), 27-382 (C26-605.2), 27-383 (C26-606.1), 27-384 (C26-606.2); 27-542 (C26-801.18).

HVAC

*21. Submitted Dwgs. #HVAC-26, HVAC-34 and HVAC-35 provides outline of the design work for the building's core but does not contain sufficient design information (dimensions, design details, materials, construction methods, etc.) based on which such work can be reviewed for conformance with the N.Y.C. Building Code. See Code Section 27-157 (C26-110.2).

22. Where sheet metal duct risers cross over to other shaft locations on the 34th and 35th floors, they shall either be enclosed in 2-hour rated construction, the same as required for shaft enclosures, or fire dampers and access doors shall be installed at the penetrations of all floor slabs and shaft walls in conformance with Code Section 27-344 (C26-504.6)(c) and RS 13-1, Section 3-3. Indicate such details on the drawings.

FIRE PROTECTION

23. Dwg. #P-26, Sprinkler System Note #1. Schedule 10 pipe is permitted for 2 1/2 inch diameter and above; for 2-inch diameter and below, schedule 40 threaded pipe and fitting shall be used. Please indicate the above in sprinkler notes.

RIDER

ALTERATION APPLICATION #V-01437

ARCHITECTURAL

1. Response to Comment #9B of our Memorandum, dated 6/29/87, regarding Auditorium Egress Requirements. To justify the proposed egress from the Auditorium to the bridge leading from the Third Floor to the WTC Plaza by way of a two-story Safe Area and the Atrium, the following is required:

   a) The "Safe Area" on the Third Floor must discharge into an "exit" as per Building Code Section 27-535 (C26-801.11)(6). See Code Article 2 for definition of "exit." In order for the Third Floor level of the Atrium to serve as an "exit", it must comply with Code Section 27-370 (C26-604.3)(h), Street Floor Lobby, and also with Section 27-370 (C26-604.3)(e) for the rating of the enclosure. Please show compliance.

   b) All doors along the path of egress from the Auditorium to the exterior shall be equipped with panic hardware. Refer to Code Section 27-535 (C26-801.11)(7).

   c) Exit doors to the Third Floor bridge leading to the WTC Plaza shall remain unlocked and available at all times when the Auditorium is in use.

2. General and directional exit signs shall be provided as required to identify exits and to clarify the direction of exit travel. Verify if signs are required to identify "false exit". Refer to Code Section 27-387 (C26-606.5). See also Comment #13.

3. Dwg. #PA-7, Floor Plan. Establish, on the drawing, the occupancy class of the Auditorium, its total floor area and the floor area per occupant. (Repeat comment).

4. Provide a seating plan of the Auditorium substantiating its conformance with the requirements of Code Section 27-531 (C26-801.7). Note also the requirement of Code Section 27-528 (C26-801.4) to keep seating and/or furniture plans on the premises.

5. The seating plan shall indicate the provisions for physically handicapped persons required per Code Section 27-531 (C26-801.7(a)(1)h.

6. Dwg. #50, Sections "D" and "D-1".

   a) No insulation is shown between the Auditorium's floor slab and the gypsum wallboard ceiling over the ramp which is open to the exterior. Please clarify. See also Comment #9.

   b) Indicate the weight of the suspended ceiling assembly per sq. ft. and per hanger and provide calculations substantiating the adequacy of the suspension system, or, show conformance with P.A. Standards for the suspension of plaster ceilings.

STRUCTURAL

7. Calculations, page 47. Submit a copy of the BS&A approval for the Maxi-Bolt anchors. The BS&A number for these anchors and for the Red Head stud anchors (page 38) shall be included on the drawings. (27-131)

8. Page 39. Confirm that the 18.15' deep beam complies with ACI 318-83, Section 10.7.

MECHANICAL

9. Dwg. #50, Sections "D" & "D-1". At the unheated and uninsulated space underneath the auditorium and above the truck ramp clarify compliance with the N.Y. State Energy Conservation Construction Code Section E402.3(a)(2).

10. Dwg. #H-3. For the auditorium and its ancillary facilities shown on architectural drawings, provide ventilation and exhaust systems as required by N.Y.C. Building Code, Sub-Articles C26-1206.0 and C26-1207.0. Also provide calculations of Ventilation Index as required, by N.Y.C. Building Code, Section C26-116.3(a).(3). (Repeat comment).

11. Dwg. #H-2. For the truck ramp exhaust discharge, determine on plans a specific configuration of the designed ceiling diffuser and indicate the direction of the discharging air so that it does not interfere with the inflow of make-up air as required by N.Y.C. Building Code, Section C26-709.7(c) and RS 13-1, Section 2-3.4.3. (Repeat comment).

ELECTRICAL

12. Dwgs. #PA6, PA7, PA8. Submit plans for emergency-powered lighting of the auditorium and safe areas, sufficient to provide five (5) foot candles of illumination at the floor level. N.Y.C. Building Code Sections 27-542 (C26-801.18), and 27-540 (C26-801.16).

13. Dwgs. #PA6, PA8. Submit plans for exit signs, at locations coordinated with the egress plans on the referenced drawings, with the signs to have letters at least eight inches high. N.Y.C. Building Code Sections 27-541 (C26-801.17) and 27-385 (C26-606.3).

14. Lighting Calculations for Truck Ramp Area. Submit plans and diagrams showing revisions to distribution and feeders. N.Y.C. Electrical Code Sections (B30-157.0)27-3174-b and (B30-157.6)27-3180.

050488

PA 36
9-75

THE PORT AUTHORITY OF NY & NJ

To A. Coras, T. Donovan Room No.

From: **Joanne Ciccolello** / Room 63W / Ext. 8389

Date 11 / 1 / 88

cc: R. Linn

Bob Linn asked me t o have you review the attached memo to Joe Vanacore on partial approvals for Salomon Brothers. Please return your comments to me as soon as possible.

JC

Att.

DRAFT

FILE-
W-7004

MEMORANDUM

To: Joseph L. Vanacore, Assistant Executive Director/Capital Programs
From: Phil LaRocco
Date: November 1, 1988
SUBJECT: SEVEN WORK TRADE CENTER - SALOMON BROTI - PARTIAL APPROVALS PROCESS FOR BASE BI MODIFICATIONS AND TENANT INITIAL FINISI
W-7004
Reference: Memo - S. Berger/All Department Directc 5/15/87 re: Construction Guidelines

Copy To:

Silverstein Properties, Inc., the developer of Seven World Trade Center, is in the process of finalizing a lease agreement with Salomon Brothers Inc. for approximately one million square feet of space in Seven World Trade Center. In order to expedite Salomon's occupancy of Seven World Trade Center, Salomon Brothers has made rapid approval of plans and drawings for both base building modifications and initial tenant finishes a part of the tripartite agreement between Salomon, Silverstein and the Port Authority.

The agreement provides that the Port Authority will have 20 working days to review partial submissions for code and structural integrity requirements. The Engineering Department has agreed to this time period. If the Port Authority does not complete its review within the 20 working days, the tenant will be allowed to proceed with construction. However, if the Port Authority after the 20th day, find any deviation from codes, the tenant will be obligated to correct such deviations immediately at no cost to the Port Authority.

to make every effort to accommodate

In accordance with PAI 45-1.07.1, Structural Integrity - Tenant Buildings and Structures, and the above-referenced memo, it is recommended that approval be granted to have the Engineering Department Tenant Review Group approve ~~all plans and construction drawings in sequential order~~.

review and

the project's contract documents in partial ~~groupings~~ submissions as they are completed by the consultants-of record.

Phil LaRocco
Director
World Trade & Economic Development

Concurred:

_____ Date: _____

R. ~~Rino~~ M. Monti
Director of Engineering
and Chief Engineer

Concurred:

_____ Date: _____
Patrick J. Falvey
General Counsel/Deputy Executive Director

Concurred:

_____ Date: _____
Joseph L. Vanacore
Asst. Executive Director/Capital Programs

Specification

For

Primary Suspension Members for Ceilings

1. General: Size and provide ceiling support components to comply with ASTM C754 and with Referenced Standard 6-16 of the NYC Building Code.

2. Strap Iron Hanger Inserts: Mild steel flats, 1 in. x 3/16 in. x 3 in. with 7/16 in. holes punched on center line and both ends, designed to develop the full strength of hangers and bent at 90 deg. to permit anchor bolt attachment to existing slab.

3. Hanger Anchorage Devices: Screws, clips, bolts or other devices applicable to the indicated method of structural anchorage for ceiling hangers. Provide anchorage devices sized for three (3) times the calculated load supported.

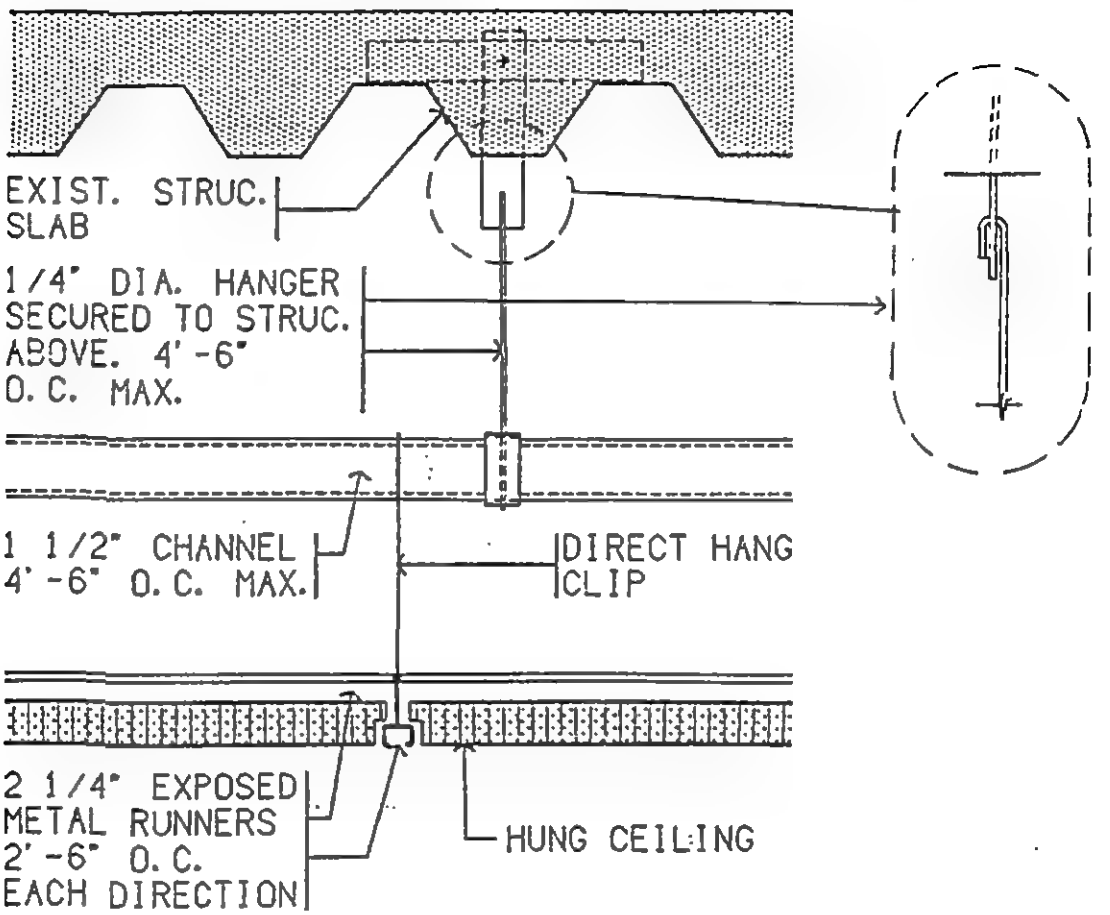
4. Hangers: Galvanized, 3/16 in. x 1 in. steel straps or 1/4 in. diameter pencil rods.

5. Carrying Channels: ASTM C754, cold rolled steel channels, 1-1/2 in., 475 lbs. per 1000 linear ft.

office Copy
THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
OCT 20 1988
W-7004
ALTERATION APPLICATION

Salomon Brothers
7 World Trade Center

October 17, 1988



TYP. HUNG CLG. DETAIL W/EXPOSED RUNNERS

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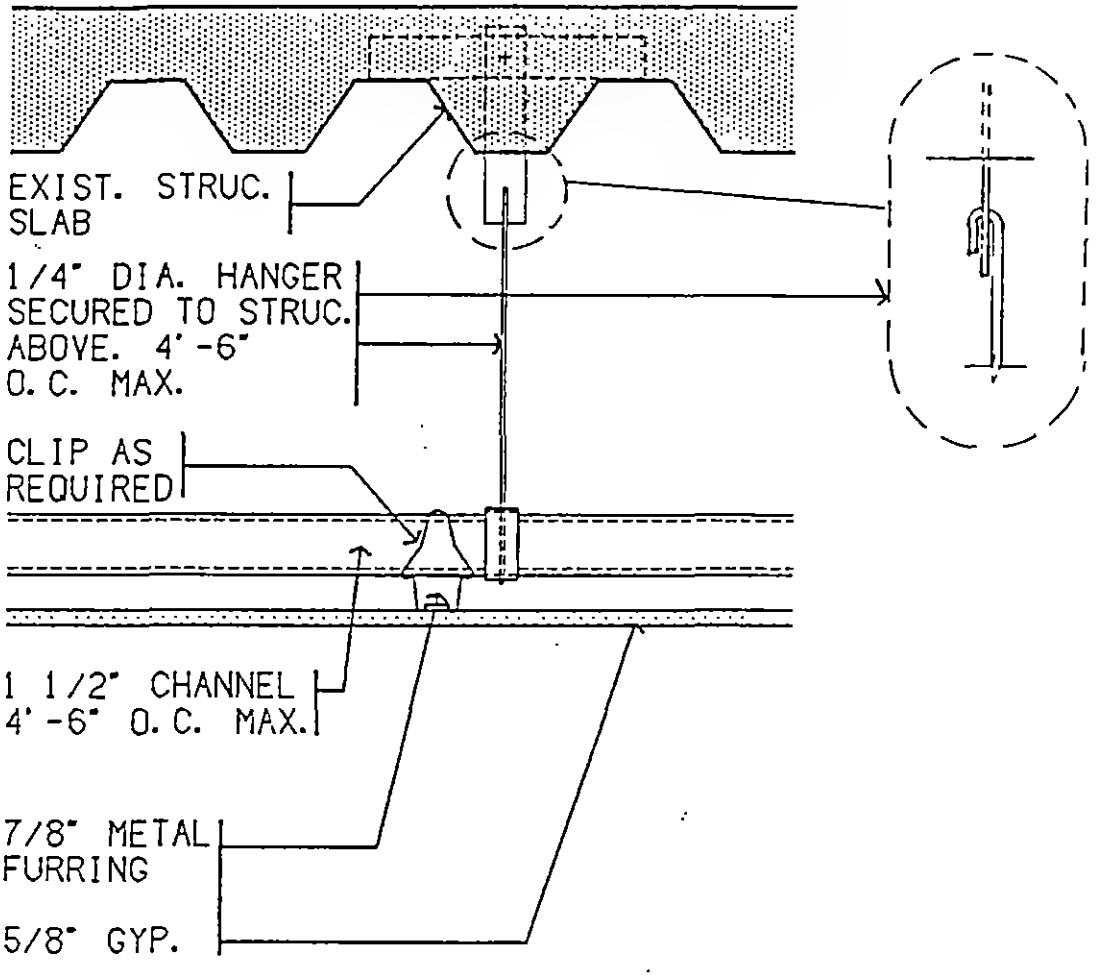

TYPICAL GYPSUM WALLBOARD CEILING

1'-9

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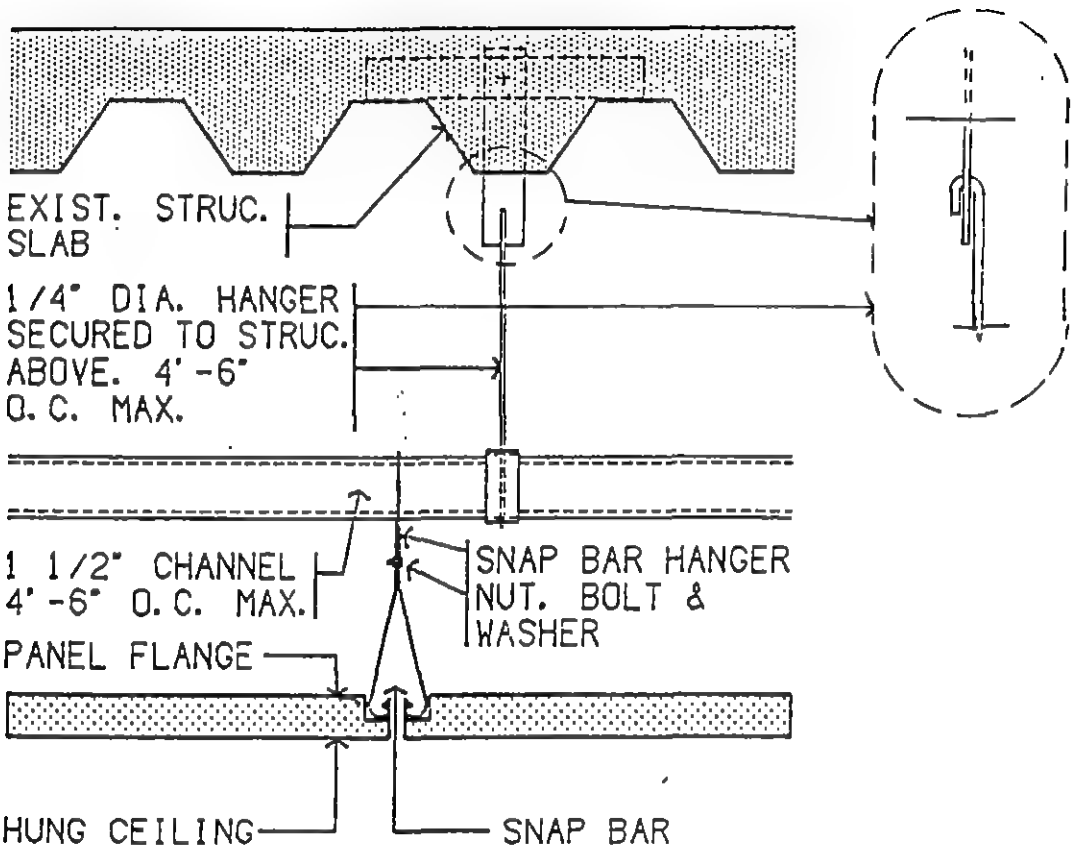


TYPICAL METAL PAN CEILING DETAIL

N.T.S.

SUSPENDED CEILINGS

SECTION 1 - GENERAL

CODE REFERENCE	SUBJECT	REQUIREMENTS
1.1	Scope	This standard covers ceiling suspension systems used primarily to support acoustical tile or acoustical lay-in panels weighing less than 4 lbs. per sq. ft., not contributing to the fire-resistance rating of a floor or roof assembly and not used for meeting the noise control requirements of the building code.

REFERENCE STANDARD RS 5-16
ACOUSTICAL TILE AND LAY-IN PANEL
CEILING SUSPENSION SYSTEMS

SUSPENDED CEILINGS

SECTION 2 - DEFINITIONS

REFERENCE STANDARD RS 5-16
ACOUSTICAL TILE AND LAY-IN PANEL
CEILING SUSPENSION SYSTEMS

2.1	Carrying Channel	The term "carrying channel" shall mean the three sided or "[" shaped metal sections which support the entire structural grid network. The carrying channels are suspended by hangers from the structure and main runners are then attached to the channels.
	Ceiling Suspension System	The term "ceiling suspension system" shall mean the entire network or grid of structural components which provides support for acoustical ceiling tile, acoustical ceiling panels, lighting fixtures and air diffusers.
	Cross Runner	The term "cross runner" shall mean the secondary or cross beams of a mechanical ceiling syspension. The cross runners normally support only the acoustical tile.
	Hanger	The term "hanger" shall mean the member employed to suspend the acoustical ceiling from the structure (steel beams, concrete slabs, etc.)
	Main Runner	The term "main runner" shall mean the primary or main beams of the type of ceiling suspension system. the main runers provide direct support for cross runners, and they may suport lighting fixtures and air diffusers. In addition, the acoustical tile may also be dirctly supported by the main runners.
	Spline	The term "spline" shall mean the edge angles or channels of a mechanical ceiling suspension system which are attached to a wall. The wall molding provides suport for acoustical tile, and cross runners which are located at the periphery of the ceiling.

SUSPENDED CEILINGS

SECTION 3 - DESIGN

REFERENCE STANDARD RS 5-16
ACOUSTICAL TILE AND LAY-IN PANEL
CEILING SUSPENSION SYSTEMS

CODE REFERENCE	SUBJECT	REQUIREMENTS
3.2	Hangers	The hangers shall be spaced 4'6" or less on centers. Each hanger shall be capable of carrying all loads suspended plus an additional 200 pounds located at midspan. The midspan deflection as attested in accordance with the test method described in Section 6 of this standard or as calculated shall not exceed 1/360 of the span. The connections of the carrying channel to the hangers shall be adequate for the load supported by the carrying channel plus 200 pounds.
3.4	Main Runner	The main runner shall be capable of carrying all loads suspended therefrom. The midspan deflection shall not exceed 1/360 of the span. Each connection of the main runner or nailing bar to the carrying channels shall be adequate for the load supported by the main runner plus 200 pounds.
3.5	Cross Runner	Cross runner shall be capable of carrying all loads suspended therefrom. The midspan deflection shall not exceed 1/360 of the span.
3.6	Splines	Splines shall not be considered as providing nor shall be used for providing structrual support for the ceiling material.
3.7	Connections	All connection devices other than bolts shall be approved by the Board of Standards and Appeals. However, they may be accepted under the code test method when test results indicating a factor of safety or four are filed in accordance with the provisions of Section C26-106.2 of the building code.

SUSPENDED CEILINGS

SECTION 5 - INSTALLATION

REFERENCE STANDARD RS 5-16
ACOUSTICAL TILE AND LAY-IN PANEL
CEILING SUSPENSION SYSTEMS

CODE REFERENCE	SUBJECT	REQUIREMENTS
5.1.1.3	Hanger Spacing	Hangers for carrying channels shall be spaced at most 4'6" on centers.
5.1.14	Minimum Sizes and Quality	Hangers for suspending carrying channels shall be a minimum of 1/4" diameter galvanized steel rods of flat bars at least 1" x 1/8".
5.1.2 (Figure 2B)	Carrying Channels	1-1/2" channel cold rolled .475 carrying channel not to exceed 4'6" O.C.
5.1.2.1	Leveling Requirements	Carrying channels shall be installed so that they are level with 1/8" in 12'. Leveling shall be performed with the supporting hangers taut.
5.1.2.2	Attachments to Hangers	Carrying channels shall be attached to the hangers in a manner that will prevent any vertical movement or rotation.
5.1.3	Main Runners	
5.1.3.1	Leveling Requirements	Main runners shall be installed so that they are all level within 1/8" in 12'. Leveling shall be performed with the main runner in firm contract with the carrying channel.
5.3.1	Ceiling Fixtures	Fixtures installed in acoustical tile or lay-in panel ceiling shall be mounted in a manner that will not compromise ceiling performance.

SECTION 5 - INSTALLATION (continued)

REFERENCE STANDARD RS 5-16
ACOUSTICAL TILE AND LAY-IN PANEL
CEILING SUSPENSION SYSTEMS

CODE REFERENCE	SUBJECT	REQUIREMENTS
5.3.2	Maximum Fixture Weights	Fixtures exceeding 80 lbs. in weight shall be supported independent of ceiling suspension system. Fixtures weighting 80 lbs. or less may be supported from the carrying channels. fixtures weighting 50 lbs. or less may be suported fromt he main runners.
5.3.3	Eccentric Loading	Fixtures shall be installed so that the main runners of carrying channels will be eccentrically loaded unless suitable accessory devices are employed and the main runner and/or carrying channel design provides for the torsional stresses.
5.3.4	Plans	The plans shall show the necessary details of the acoustical ceiling to satisfactorily identify the number, size, spacing, location, weights, and types of fixtures and means employed to comply with this section.

SUSPENDED CEILINGS

SECTION 6 -
TEST METHODS FOR DETERMINING DEFLECTION

REFERENCE STANDARD RS 5-16
ACOUSTICAL TILE AND LAY-IN PANEL
CEILING SUSPENSION SYSTEMS

CODE REFERENCE	SUBJECT	REQUIREMENTS
6.1	Introduction	The test method outlined provides the means by which data can be secured for characterizing the structural performance of individual suspension systems. The method consists of placing structural members as beams on simple suports, and subjecting them to simulated uniformly distributed leads over their length. The loading is incrementally imposed and the performance of the structural member is obtained from observing the resulting beam deflections.
6.3	Loading Facility	The loading of structural members shall be performed in a manner which closely simulates their use in suspension systems. Span distances, spacing between secondary supports, etc., shall be typical of ceiling grid designs in which the structural member is used.
6.4	Structural Members	The manufacturer, installer, or architect or engineer, shall determine the load-deflection performance.
6.4.1.	Structural Members	The structural members tested shall be identical to the sections used in the final system design. All cutouts, slots, etc., as exist in the system component shall be included in the sections evaluated.
6.7	Section Performance	The performance of structrual members of suspension systems shall be represented by individual load-deflection plots obtained from test performed at each different span length used in service.

REFERENCE STANDARD RS 5-16
ACOUSTICAL TILE AND LAY-IN PANEL CEILING SUSPENSION SYSTEMS

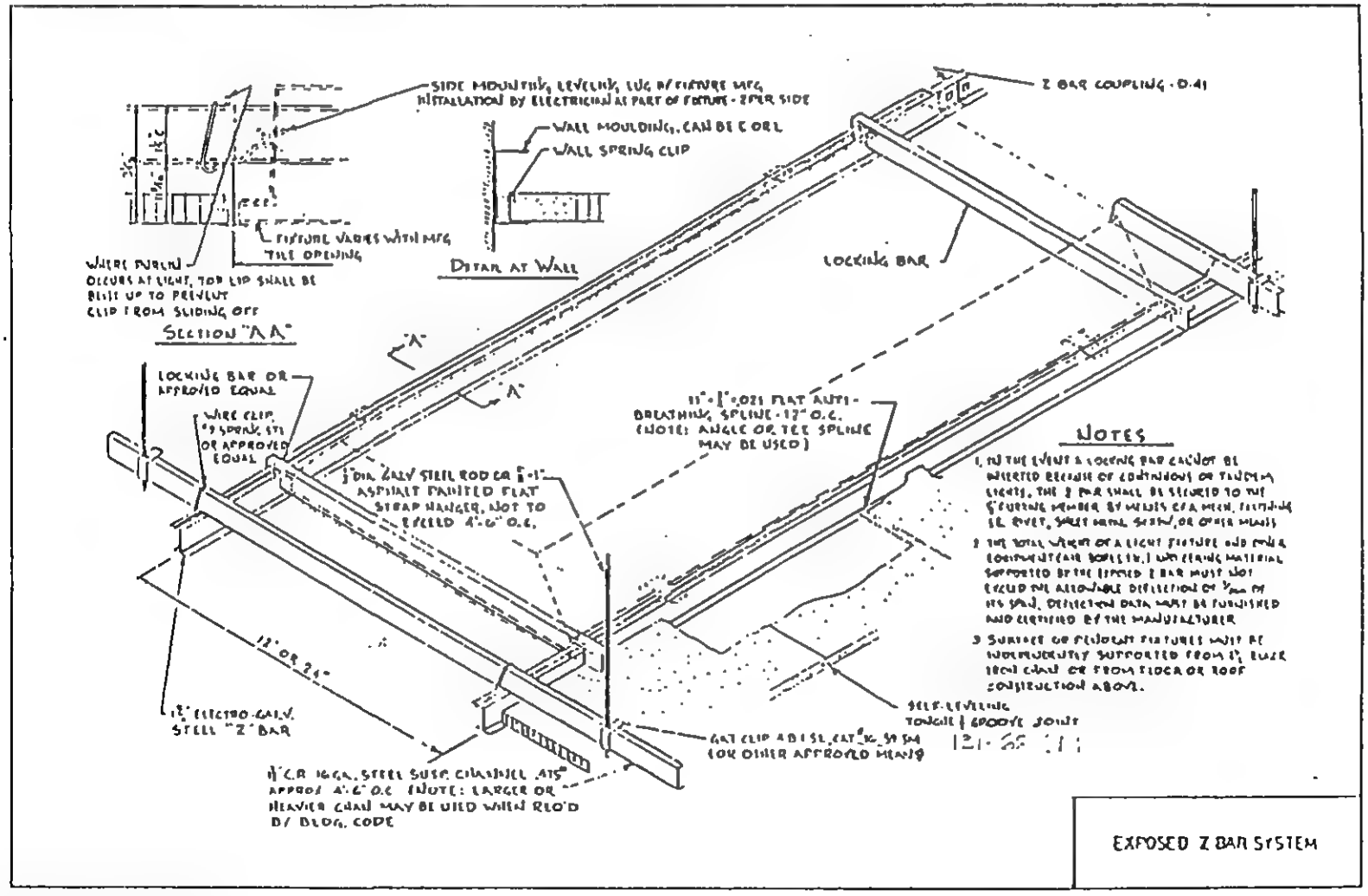
SECTION 6 - TEST METHODS FOR DETERMINING DEFLECTION (Continued)

6.7.3	Section Performance	The average load-deflection curve shall be used to establish the maximum uniformly distributed load which the structural member can successfully sustain prior to reaching the deflection limit of 3/360th of the span length in inches.
6.7.4	Section Performance	The load-deflection curve shall be used to establish the maximum loading intenstiy beyond which the structural member begins to yield.
6.8	Suspension System Performance	Published performance data for individual suspension systems shall be developed by the manufacturer upon the basis of results obtained from load-deflection tests of its principal structural members. Where a ceiling design incorporates a number of components, each of which experiences some deflection as used in the system, the additive nature of these displacements shall be recognized in setting an allowable system deflection criteria.

SUSPENDED CEILINGS

REFERENCE STANDARD RS 5-16
ACOUSTICAL TILE AND LAY-IN PANEL CEILING SUSPENSION SYSTEMS

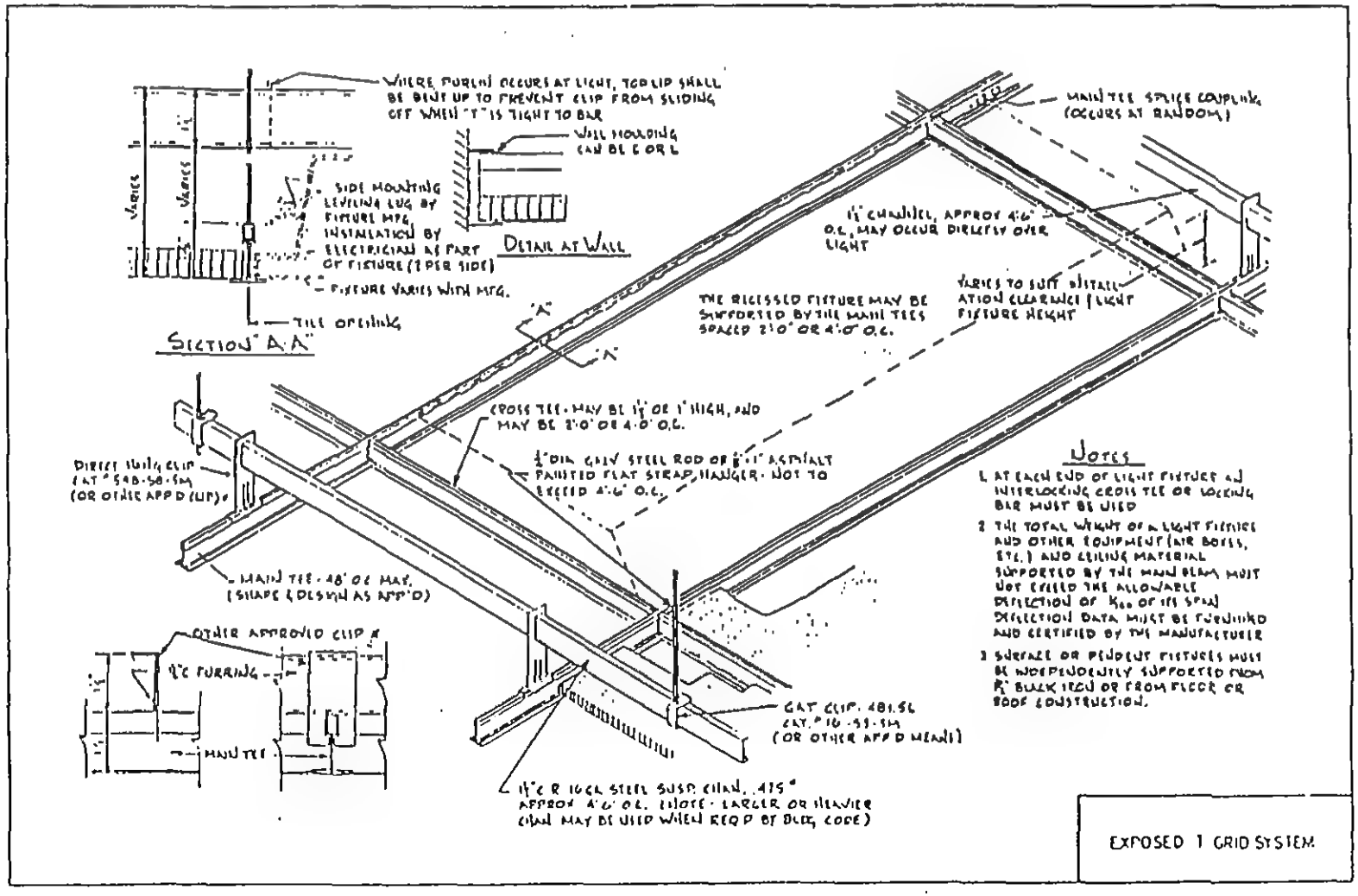
FIGURE 3A - EXPOSED "Z" BAR SYSTEM



SUSPENDED CEILINGS

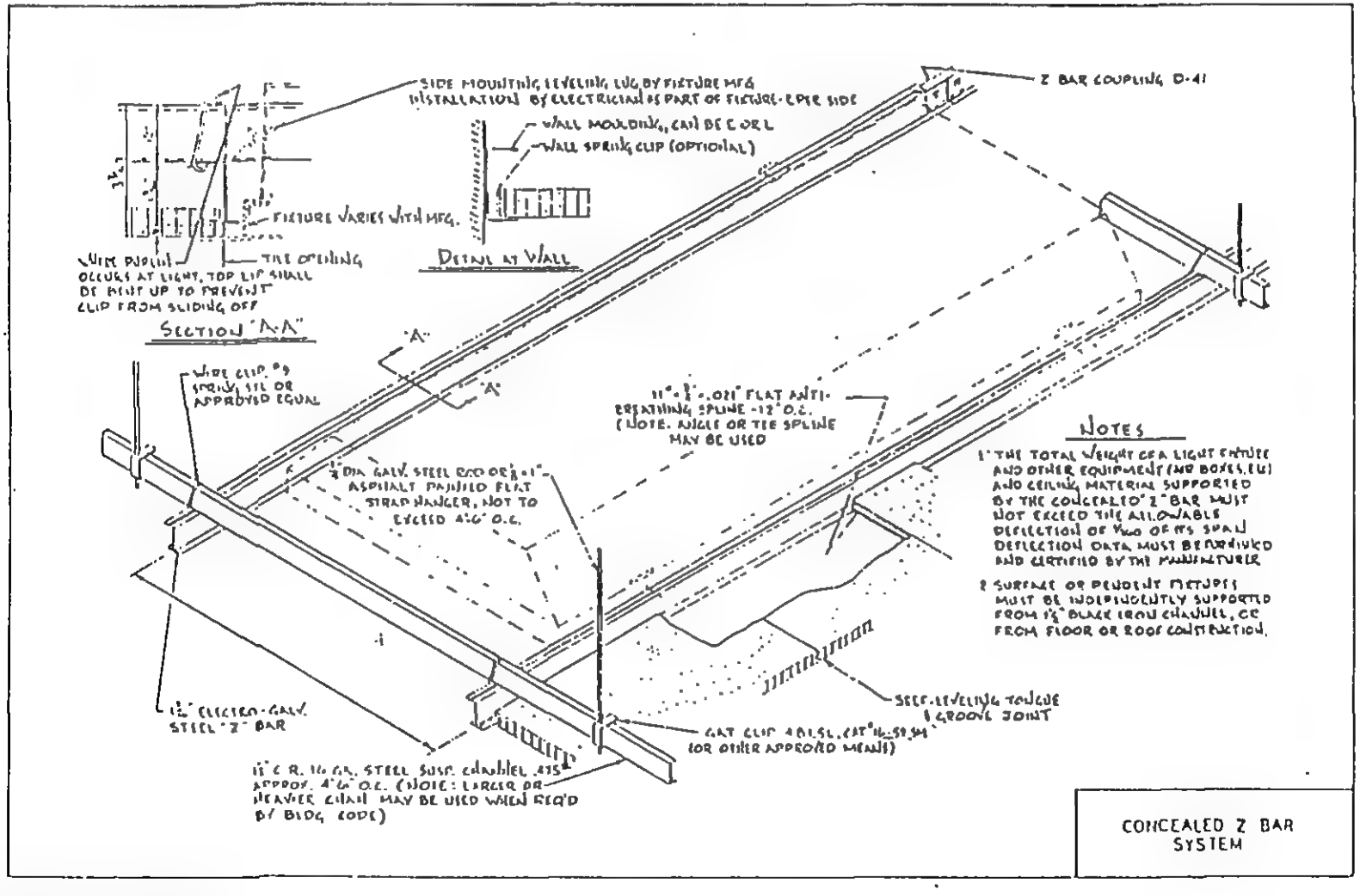
REFERENCE STANDARD RS 5-16
ACOUSTICAL TILE AND LAY-IN PANEL CEILING SUSPENSION SYSTEMS

FIGURE 3C - EXPOSED "T" GRID SYSTEM



REFERENCE STANDARD RS 5-16
ACOUSTICAL TILE AND LAY-IN PANEL CEILING SUSPENSION SYSTEMS

FIGURE 36 - CONCEALED "Z" BAR SYSTEM



Salomon Bros W-7004 (2)

Telephone conversation 10/24/88
A. Hood called A. Tamboli of Irwin G. Cantor's office

Discussed the following points:

1. Structural calcs (fourth page) show arrangement of 200 psf and 300 psf live loads in north-west corner, which differs from layout of rooms shown on Dwg #A-35. A. Tamboli said that the architectural and mechanical drawings have to be revised and will show the same arrangement as the structural sketch.

2. The above-mentioned spaces were identified by Tamboli as a UPS room and a battery storage room.

3. The illegible note on the above-mentioned page of the structural calcs, following the words 300 and 200, was clarified by Tamboli as a note saying that the load should not be reduced for designing beams.

4. The 75 psf load, south of the above-mentioned

spaces, is a mechanical equipment room

5. The design of the floor reinforcing for the 34th floor data center is covered by the note on the calculation index page.

6. The relocated fan room on the 35th floor, and the mechanical equipment room, both have a live load of 75 psf, while the affected floors have a capacity of 100 psf.

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M E M O R A N D U M

TO: Arthur Coras, Manager, Quality Assurance Division
FROM: Luciano Sanchez
SUBJECT: THE WORLD TRADE CENTER - SALOMON BROTHERS INC. - LEASE WT 2305 - TCA #7004 - CONTRACT WTC 597.004 - REVIEW OF CONTRACT DRAWINGS - BASE BUILDING MODIFICATIONS
REF: Transmittal of drawings, dated October 19, 1988
DATE: October 19, 1988
CC: P. Cooper, T. Donovan, R. Linn, P. Marchese, E. McNierney, A. Vaccaro*

You are requested to review the drawings and specifications delivered to your office on October 18, 1988 for New York City Building Code compliance, construction details and specifications, as they apply to 7 World Trade Center.

This work will be performed under a Tenant Construction Application and consist of Mechanical, Electrical, Plumbing, Fire Protection and Vertical Transportation Modifications to the subject premises. The estimate cost for this work is not available at the present time.

In addition, all persons copied with attachments of this memorandum are also requested to submit their comments by November 1, 1988.

Should yo have any questions on this matter please contact me on 466-8566 or Mr. E. McNierney on 313-2257.

Luciano Sanchez
WTC Planning Division

E.McN/ava
*attach.

Office Copy
THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
OCT 24 1988 (2)
W-7004
ALTERATION APPLICATION

3F

2127

65

TENANT ALTERATION REVIEW REQUEST

CHECK APPLICABLE ROUTING	ROOM NO.
Engineering (C.A.D.) (W13)	51E
R. LINN - WT 4F-7 DEP. DIR. PHYS	63W
P. MARCHESE - WT PLNG DIV.	62E
L. SANCHEZ " " "	62E
Control Desk " " " (WA)	62E
H. CHENNISI " " "	62E
E. DALY " " "	62E
M. GLAVICIC " " " (W1)	62E
C. SEMAN " " " (W1)	62E
C. SERGE WT CONST. DIV. (W1)	38N
F. BOYCE WT OPER. (W1)	63N
T. CANCELLIERE WT OPER. (W1)	B2B
Insp. & Safety (ENG. AUDIT) (W1)	#41
R. BENACCHIO WT OPER.	
A. VACCARO WT CONST DIV.	38N
G. WENGER DEPT. RENT. DIV.	63S
M. SINGLETON WT PLNG. DIV.	62E
CENTRAL FILE	
N. CHAMFRAU RISK MANAGEMENT (W1)	#43

Description of Work:

7 WTC
BASE BUILDING
MODIFICATIONS

FACILITY: 7 WTC
APPLICANT'S NAME: SALOMON BROS
APPLICATION NO.: TCA 7004
DRAWING NO(S). & SEE ATTACHED LIST
CONTRACT NO.: NTC 597.004
DATE: 10 / 18 / 88

☑ You are requested to review the attached application and forward your comments to: L. SANCHEZ

☐ Attached are revised drawings. Please review only those items on which exception was previously taken and send your comments to:

Org. Unit	Room No.	Contact	Ext.
829	62E	L. SANCHEZ	466-8566

No later than: NOV. 1, 1988

Title

If no reply is received by above date, your concurrence will be assumed unless arrangements have been made for additional time for review.

FOR USE OF REVIEWING DEPARTMENT

COMMENTS: (Use reverse side if necessary) Indicate next to each comment whether it is a condition or recommendation.

DRAWING NOS.	TITLE	REV.	DATE

SEE ATTACHED DRAWING LIST

Aaron K. Stieglitz
FOR: L. SANCHEZ

T[illegible]

Hard copy OCT 19 1988
W-7004(2)
ALTERATION APPLICATION

(Check applicable box)

NOTE: LETTER LINN TO CORAS TO FOLLOW.

☐ Approved ☐ Approved with Conditions and Recommendations Noted Above ☐ Disapproved with Requirements for Approval Noted Above ☐ Disapproved for Reasons Noted Above

Signature	Title	Date

SALOMON BROS. WTC 597.004
TCA 7004

List of Drawings - Base Building Modifications
(All Drawings Dated 10/17/88)

TITLE OF DRAWING	DWG. NO.
ARCHITECTURAL	
26th Floor Plan (Typical Non-SBI Floors for Floors 7 through 29)	A-26
30th Floor Plan	A-30
31st Floor Plan	A-31
32nd Floor Plan	A-32
33rd Floor Plan	A-33
34th Floor Plan	A-34
35th Floor Plan	A-35
Miscellaneous Base Building Modifications	A-200
Stair Details	A-250
Partition Schedule and Details	A-255
34th Floor Demolition Plan	D-34
35th Floor Demolition Plan	D-35
STRUCTURAL	
7th to 29th Floor Framing Plan	S-4
30th Floor Framing Plan	S-5
31st Floor Framing Plan	S-6
32nd Floor Framing Plan	S-7
33rd Floor Framing Plan	S-8
34th Floor Framing Plan	S-9
35th Floor Framing Plan	S-10
Typical Superstructure Details & General Notes	S-32
Typical Superstructure Details	S-33
Superstructures Sections - 1	S-34
COMMUNICATIONS	
7th - 29th Base Building Communications Floor Plan	C-7-29.1
30th Floor Base Building Communications Floor Plan	C-30.1
31st Floor Base Building Communications Floor Plan	C-31.1
32nd Floor Base Building Communications Floor Plan	C-32.1
33rd Floor Base Building Communications Floor Plan	C-33.1
34th Floor Base Building Communications Floor Plan	C-34.1
35th Floor Base Building Communications Floor Plan	C-35.1

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W-7004 (2)

MECHANICAL

26th Floor Plan (Typical for Floors 7 - 29)	HVAC-26
34th Floor Plan (Typical for Floors 30 - 34)	HVAC-34
35th Floor Plan	HVAC-35
34th Floor Demolition Plan (Typical for Floors 30 - 34)	D-34-H
35th Floor Demolition Plan	D-35-H

ELECTRICAL

Electrical Riser	D-1E
Standby Power and UPS Riser	E-R1
One Line Diagram - Service Entrance	E-R2
30th Floor Electrical Plan	E-30
Typical Electrical Plan 31 - 34	E-34
35th Floor Electrical Plan	E-35
Typical Electrical Demolition Plan 7 - 29	D-7E — SHOULD BE MARKED D-26 E
35th Floor Electrical Demolition Plan	D-35E

PLUMBING & FIRE PROTECTION

26th Floor Plan (Typical to 7 - 29th Floors)	P-26
32nd Floor Plan (Typical to 30 - 34th Floors)	P-32
33rd Floor Plan	P-33
34th Floor Plan	P-34
35th Floor Plan	P-35
34th Floor Plan	D-34P
35th Floor Plan	D-35P

Book of Structural Computations

OCT 1 [illegible]

W-7004 (2)

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SALOMON BROTHERS INC

7 WORLD TRADE CENTER HEADQUARTERS

Mechanical/Electrical/Plumbing
Fire Protection and Vertical Transportation

Base Building Modifications

Prepared for:
Skidmore, Owings & Merrill
220 East 42nd Street
New York, New York 10017

Prepared by:
Flack + Kurtz Consulting Engineers
475 Fifth Avenue
New York, New York 10017

John A. Van Deusen & Associates, Inc
5 Regent Street
Livingston, New Jersey 07039

September 15, 1988

office copy OCT 13
W-7004②

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V. VERTICAL TRANSPORTATION

SALOMON BROTHERS INC.

7 WORLD TRADE CENTER HEADQUARTERS

New York, New York 10048

I. HVAC

The Base Building HVAC system presently installed in 7 World Trade Center is commonly referred to as a floor-by-floor DX system. The basic components are 7,500 tons of cooling towers located on the 46th floor with appropriate condenser water pumps on the 45th floor serving two (2) Direct Expansion Trane Compartmental Units (45 tons each) on floors 7 thru 47 inclusive. The perimeter areas of the building are heated by finned tube time radiation with water pumped from the 5th floor. Hot water is generated with Con Ed high pressure street steam.

This HVAC system is designed to maintain 78°F on all floors with an average power load of 3.5 watts per sq. ft. The requirements of SBI, for all its space, exceed the capacity of the Base Building system. The modifications described below are required.

For the ultimate number of floors of occupancy of SBI, a supplemental chilled water plant of 4,400 tons will be installed on the roof together with multiple cooling tower cells, condenser water, chilled water pumps and heat exchangers to accommodate the tonnage.

Chilled water from this plant will be used predominately to serve units located on the two (2) technology floors (35 & 44), the present three (3) and one (1) future trading floors (36, 38, 40 and 42), and the local office support spaces located on all floors.

Chilled water will also serve the Health Club on the 47th floor and the auditorium on the 38th floor.

Floors 45 and 46 (except where otherwise noted) will be served by either new DX Units or chilled water units located on the 47th floor.

Floors 30 thru 34, 36 and 37 will also be served by the existing DX units in their present location. One existing relocated Trane DX unit each will also serve the mezzanine of each trading floor (floors 39, 41 and 43), the area on

the trading floor below the mezzanine (floors 38, 40 and 42) and the 44th and 35th technology floors. Two (2) existing relocated Trane DX units each will serve the western portion of each Production Floor (floors 30 thru 34 and temporary production floors 36 and 37).

Until the fourth trading floor is constructed, the 36th and 37th floors will be configured as Production Office floors served by the existing DX units in their present mechanical rooms with additions as called for above.

All DX units, whether relocated or as presently installed, will be connected to the existing Base Building condensing water system. The present fresh air shaft (gravity type) will be relocated westward and converted to a pressurized shaft served by a conditioned make-up air unit installed on the roof. This shaft shall extend from the roof to and including the 30th floor. It shall be sized for future extension down to and including floor 24.

Until SBI extends to floor 24, ventilation air for floors 24 thru 29 inclusive will be provided by an extension of the lower gravity shaft. The extension will be fitted with a fan.

The existing perimeter radiation system will be modified to accommodate a 24" raised floor on each trading floor and a 6" raised floor on non-trading floors. The intermediate level of the trading floor where the slab is removed will be provided with a complete new finned tube radiation enclosure to meet architectural requirements.

The present 24 inch condenser water supply and return mains will also be offset down to floor 35 where it will connect to the existing condenser water risers.

One cell of the 5 cell 7500 ton cooling tower on the 46th floor will be repiped to allow exclusive SBI use of this cell. SBI will also use some of the capacity of the remaining cells.

For the emergency generators installed on the fifth floor, the East and West intake plenums shall be fitted with propeller fans to overcome air flow resistance. New louvers on the North face shall accommodate radiator and muffler air discharge.

All Salomon Brothers space on 4th, 3rd and 2nd floors will be served by either relocated DX units from the upper floors or new DX units sized specifically for their intended duty.

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SALOMON BROTHERS INC

7 WORLD TRADE CENTER HEADQUARTERS

Mechanical/Electrical/Plumbing
Fire Protection and Vertical Transportation

Base Building Modifications

Prepared for:
Skidmore, Owings & Merrill
220 East 42nd Street
New York, New York 10017

Prepared by:
Flack + Kurtz Consulting Engineers
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New York, New York 10017

John A. Van Deusen & Associates, Inc
5 Regent Street
Livingston, New Jersey 07039

September 15, 1988

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system panels will be relocated on floors 35 through 47 to permit the relocation of the mechanical equipment rooms. Additional zones and control points will be provided for SBI fire detection and suppression systems and for HVAC equipment controls. Adequate louvers, outside air and exhaust will be provided for ventilation of transformer vaults, stand-by generators, and UPS battery rooms.

III. PLUMBING

The main sanitary and vent stacks are located outside the core at columns 58, 60, 79 and 81.

Sub-stacks within the core area serve toilets directly from connections to the main stacks at approximately every 10th floor from the 47th floor down.

In order to modify the Base Building sanitary and vent system to suit new SBI facilities, sub-stacks 5A, 6B, 7B and part of 5B will be removed and capped at main stacks S-1, S-2 and S-3.

The domestic water system is supplied from 2 storage tanks on the roof and divided into five zones:

Zone 1 - Floors 3 thru 6

Zone 2 - Floors 7 thru 16

Zone 3 - Floors 17 thru 26

Zone 4 - Floors 27 thru 36

Zone 5 - Floors 37 thru 47

(Zone 5 is equipped with a booster pump.)

Building cooling towers are supplied from the house tanks via a separate booster pump on the 47th floor MER.

All zones are supplied from an eight (8) inch express riser which extends through the building from the house tanks. Each zone is supplied from the lowest level of that zone and is equipped with a pressure reducing valve rig. Each zone has nine (9) sub-risers which directly supply plumbing fixtures at each floor. Hot water is generated at each floor with point of use electric water heaters.

In order to modify the Base Building domestic water system to suit new SBI facilities, Sub-Riser No. 5 and part of Sub-Riser No. 7 will be removed from floors 47 down to 30. All electric domestic water heaters will be removed and capped back to water riser S-9.

Install a new four (4) inch emergency cooling tower make-up riser from the ground floor to the roof. Provide two (2) capped water inlet connections (one on Washington Street side of the building and one on Vesey Street) at the ground floor with a valved riser drain (spill to grade). In the event of a city water main failure, this riser will be supplied with water from tanker trucks.

A new four (4) inch domestic gas service from a street main will be provided and metered on the first floor.

The metered domestic gas riser will be run up through the building plugged outlets provided at the 4th and 45th floor for new SBI kitchen facilities.

IV. FIRE PROTECTION

The Base Building combined standpipe/sprinkler system is supplied from the house tanks by gravity from floors 39 down to 21 and by automatic fire pump for upper floors 47 down to 40.

Floors 1 through 20 are supplied from an automatic fire pump.

No major modification of the existing Base Building combined standpipe sprinkler riser system is required.

The auxiliary fire hose cabinets and valves at standpipe riser F-2H (column 79) at floors 43, 41, 39 and 37 (Part slabs removed for trading floors) will be removed.

The existing sprinkler loop main piping at trading floors will be removed. It will be reinstalled to suit new double story floors and single story mezzanines.

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SALOMON BROTHERS INC

7 WORLD TRADE CENTER HEADQUARTERS

Mechanical/Electrical/Plumbing
Fire Protection and Vertical Transportation

Base Building Modifications

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SALOMON BROTHERS INC.

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New York, New York 10048

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This HVAC system is designed to maintain 78°F on all floors with an average power load of 3.5 watts per sq. ft. The requirements of SBI, for all its space, exceed the capacity of the Base Building system. The modifications described below are required.

For the ultimate number of floors of occupancy of SBI, a supplemental chilled water plant of 4,400 tons will be installed on the roof together with multiple cooling tower cells, condenser water, chilled water pumps and heat exchangers to accommodate the tonnage.

Chilled water from this plant will be used predominately to serve units located on the two (2) technology floors (35 & 44), the present three (3) and one (1) future trading floors (36, 38, 40 and 42), and the local office support spaces located on all floors.

Chilled water will also serve the Health Club on the 47th floor and the auditorium on the 38th floor.

Floors 45 and 46 (except where otherwise noted) will be served by either new DX Units or chilled water units located on the 47th floor.

Floors 30 thru 34, 36 and 37 will also be served by the existing DX units in their present location. One existing relocated Trane DX unit each will also serve the mezzanine of each trading floor (floors 39, 41 and 43), the area on

the trading floor below the mezzanine (floors 38, 40 and 42) and the 44th and 35th technology floors. Two (2) existing relocated Trane DX units each will serve the western portion of each Production Floor (floors 30 thru 34 and temporary production floors 36 and 37).

Until the fourth trading floor is constructed, the 36th and 37th floors will be configured as Production Office floors served by the existing DX units in their present mechanical rooms with additions as called for above.

All DX units, whether relocated or as presently installed, will be connected to the existing Base Building condensing water system. The present fresh air shaft (gravity type) will be relocated westward and converted to a pressurized shaft served by a conditioned make-up air unit installed on the roof. This shaft shall extend from the roof to and including the 30th floor. It shall be sized for future extension down to and including floor 24.

Until SBI extends to floor 24, ventilation air for floors 24 thru 29 inclusive will be provided by an extension of the lower gravity shaft. The extension will be fitted with a fan.

The existing perimeter radiation system will be modified to accommodate a 24" raised floor on each trading floor and a 6" raised floor on non-trading floors. The intermediate level of the trading floor where the slab is removed will be provided with a complete new finned tube radiation enclosure to meet architectural requirements.

The present 24 inch condenser water supply and return mains will also be offset down to floor 35 where it will connect to the existing condenser water risers.

One cell of the 5 cell 7500 ton cooling tower on the 46th floor will be repiped to allow exclusive SBI use of this cell. SBI will also use some of the capacity of the remaining cells.

For the emergency generators installed on the fifth floor, the East and West intake plenums shall be fitted with propeller fans to overcome air flow resistance. New louvers on the North face shall accommodate radiator and muffler air discharge.

All Salomon Brothers space on 4th, 3rd and 2nd floors will be served by either relocated DX units from the upper floors or new DX units sized specifically for their intended duty.

II. ELECTRICAL

The Base Building electrical system presently installed in 7 World Trade Center provides six watts per square foot; Salomon's power requirement for lighting and equipment is 14 watts per square foot. An additional Con Edison service and standby generator system is required to support Salomon's loads.

The existing building electrical risers will be utilized to provide power to lights and equipment that do not need to operate in the event of a power failure. Above the 35th floor the risers in electrical closet 'C' and in the mechanical equipment room will be offset and run in SBI's new east electrical closet.

A new set of 4 medium voltage Con Edison feeders will be provided to a new 10 MVA transformer installation to provide the additional power required. The transformer vaults will be located on the fifth floor - north and the installation will be expandable from the initial four (4) 2500 KVA transformers to an ultimate eight transformers.

Standby power will be provided by 1400 KW diesel generators located in the existing generator room and in the remaining space on the fifth floor - north. The initial installation will be seven generators, one of which is redundant, feeding two (2) generator switchboards. The installation will be expandable to ten (10) generators.. A 12,000 gallon diesel fuel tank will provide for twelve (12) hours of full load operation. Eight (8) automatic transfer switches will be served from the new substation and from the generator switchboard.

Standby power risers will be located in two (2) shafts and run express from the fifth to the thirtieth floor. Two (2) plug-in bus ducts for HVAC equipment will run from 30 to the roof in the new mechanical equipment rooms. Two (2) plug-in bus ducts for stand-by lights and receptacles will run from 30 to 47 via the new electric closets; UPS power will be distributed via plug-in bus ducts. Access to express risers will be provided at intervals of fifty (50) feet or less. Express risers outside of SBI space will be protected by fire rated walls.

Two additional electrical closets will be provided on all SBI floors. Space will be provided in the north-west data closet for SBI security risers for the full rise of the building. The fire alarm panels and building automation

system panels will be relocated on floors 35 through 47 to permit the relocation of the mechanical equipment rooms. Additional zones and control points will be provided for SBI fire detection and suppression systems and for HVAC equipment controls. Adequate louvers, outside air and exhaust will be provided for ventilation of transformer vaults, stand-by generators, and UPS battery rooms.

III. PLUMBING

The main sanitary and vent stacks are located outside the core at columns 58, 60, 79 and 81.

Sub-stacks within the core area serve toilets directly from connections to the main stacks at approximately every 10th floor from the 47th floor down.

In order to modify the Base Building sanitary and vent system to suit new SBI facilities, sub-stacks 5A, 6B, 7B and part of 5B will be removed and capped at main stacks S-1, S-2 and S-3.

The domestic water system is supplied from 2 storage tanks on the roof and divided into five zones:

Zone 1 - Floors 3 thru 6

Zone 2 - Floors 7 thru 16

Zone 3 - Floors 17 thru 26

Zone 4 - Floors 27 thru 36

Zone 5 - Floors 37 thru 47

(Zone 5 is equipped with a booster pump.)

Building cooling towers are supplied from the house tanks via a separate booster pump on the 47th floor MER.

All zones are supplied from an eight (8) inch express riser which extends through the building from the house tanks. Each zone is supplied from the lowest level of that zone and is equipped with a pressure reducing valve rig. Each zone has nine (9) sub-risers which directly supply plumbing fixtures at each floor. Hot water is generated at each floor with point of use electric water heaters.

In order to modify the Base Building domestic water system to suit new SBI facilities, Sub-Riser No. 5 and part of Sub-Riser No. 7 will be removed from floors 47 down to 30. All electric domestic water heaters will be removed and capped back to water riser S-9.

Install a new four (4) inch emergency cooling tower make-up riser from the ground floor to the roof. Provide two (2) capped water inlet connections (one on Washington Street side of the building and one on Vesey Street) at the ground floor with a valved riser drain (spill to grade). In the event of a city water main failure, this riser will be supplied with water from tanker trucks.

A new four (4) inch domestic gas service from a street main will be provided and metered on the first floor.

The metered domestic gas riser will be run up through the building plugged outlets provided at the 4th and 45th floor for new SBI kitchen facilities.

IV. FIRE PROTECTION

The Base Building combined standpipe/sprinkler system is supplied from the house tanks by gravity from floors 39 down to 21 and by automatic fire pump for upper floors 47 down to 40.

Floors 1 through 20 are supplied from an automatic fire pump.

No major modification of the existing Base Building combined standpipe sprinkler riser system is required.

The auxiliary fire hose cabinets and valves at standpipe riser F-2H (column 79) at floors 43, 41, 39 and 37 (Part slabs removed for trading floors) will be removed.

The existing sprinkler loop main piping at trading floors will be removed. It will be reinstalled to suit new double story floors and single story mezzanines.

SALOMON BROTHERS INC

7 WORLD TRADE CENTER HEADQUARTERS

Mechanical/Electrical/Plumbing
Fire Protection and Vertical Transportation

Base Building Modifications

Prepared for:
Skidmore, Owings & Merrill
220 East 42nd Street
New York, New York 10017

Prepared by:
Flack + Kurtz Consulting Engineers
475 Fifth Avenue
New York, New York 10017

John A. Van Deusen & Associates, Inc
5 Regent Street
Livingston, New Jersey 07039

September 15, 1988

office copy OCT 19 W-7004 (3)

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II. ELECTRICAL

The Base Building electrical system presently installed in 7 World Trade Center provides six watts per square foot; Salomon's power requirement for lighting and equipment is 14 watts per square foot. An additional Con Edison service and standby generator system is required to support Salomon's loads.

The existing building electrical risers will be utilized to provide power to lights and equipment that do not need to operate in the event of a power failure. Above the 35th floor the risers in electrical closet 'C' and in the mechanical equipment room will be offset and run in SBI's new east electrical closet.

A new set of 4 medium voltage Con Edison feeders will be provided to a new 10 MVA transformer installation to provide the additional power required. The transformer vaults will be located on the fifth floor - north and the installation will be expandable from the initial four (4) 2500 KVA transformers to an ultimate eight transformers.

Standby power will be provided by 1400 KW diesel generators located in the existing generator room and in the remaining space on the fifth floor - north. The initial installation will be seven generators, one of which is redundant, feeding two (2) generator switchboards. The installation will be expandable to ten (10) generators.. A 12,000 gallon diesel fuel tank will provide for twelve (12) hours of full load operation. Eight (8) automatic transfer switches will be served from the new substation and from the generator switchboard.

Standby power risers will be located in two (2) shafts and run express from the fifth to the thirtieth floor. Two (2) plug-in bus ducts for HVAC equipment will run from 30 to the roof in the new mechanical equipment rooms. Two (2) plug-in bus ducts for stand-by lights and receptacles will run from 30 to 47 via the new electric closets; UPS power will be distributed via plug-in bus ducts. Access to express risers will be provided at intervals of fifty (50) feet or less. Express risers outside of SBI space will be protected by fire rated walls.

Two additional electrical closets will be provided on all SBI floors. Space will be provided in the north-west data closet for SBI security risers for the full rise of the building. The fire alarm panels and building automation

system panels will be relocated on floors 35 through 47 to permit the relocation of the mechanical equipment rooms. Additional zones and control points will be provided for SBI fire detection and suppression systems and for HVAC equipment controls. Adequate louvers, outside air and exhaust will be provided for ventilation of transformer vaults, stand-by generators, and UPS battery rooms.

III. PLUMBING

The main sanitary and vent stacks are located outside the core at columns 58, 60, 79 and 81.

Sub-stacks within the core area serve toilets directly from connections to the main stacks at approximately every 10th floor from the 47th floor down.

In order to modify the Base Building sanitary and vent system to suit new SBI facilities, sub-stacks 5A, 6B, 7B and part of 5B will be removed and capped at main stacks S-1, S-2 and S-3.

The domestic water system is supplied from 2 storage tanks on the roof and divided into five zones:

Zone 1 - Floors 3 thru 6

Zone 2 - Floors 7 thru 16

Zone 3 - Floors 17 thru 26

Zone 4 - Floors 27 thru 36

Zone 5 - Floors 37 thru 47

(Zone 5 is equipped with a booster pump.)

Building cooling towers are supplied from the house tanks via a separate booster pump on the 47th floor MER.

All zones are supplied from an eight (8) inch express riser which extends through the building from the house tanks. Each zone is supplied from the lowest level of that zone and is equipped with a pressure reducing valve rig. Each zone has nine (9) sub-risers which directly supply plumbing fixtures at each floor. Hot water is generated at each floor with point of use electric water heaters.

PA 36
9-75

THE PORT AUTHORITY OF NY & NJ

To P. Cooper Room No 51 NE TCRU

From: Luciano Sanchez / Room 62E / Ext. 8566

Date 10/19/88

SALOMON BROS. - 7 WTC
WTC 597.004 TCA 7004
BASE BUILDING MODIFICATIONS

THE ATTACHED IS TO BE INCLUDED IN YOUR REVIEW

- LIST OF 10/17/88 SUBMITTAL
- CODE ANALYSIS
- CONSTRUCTION STATUS
- EGRESS DIAGRAMS

HANDY FEDERAL

BASE BUILDING MODIFICATION — OCTOBER 3, 1988

SUBMITTAL PACKAGE TO BE DELIVERED TO PORT AUTHORITY OF NY/NJ FOR APPROVAL

October 17, 1988 - Non-SBI Floors (7 thru 29), 30 thru 34 and 35

- Microwave shaft and riser closet (35th Floor)
- Electrical riser closets (Floors 30-35)
- (2) Electrical risers (Floors 7-30)
- Communications risers (Floors 7-35)
- Floor reinforcing for data center (Floor 34)
- Reinforce floors to accommodate raised floor at (Floors 30-35)
- Air shaft transfer (23rd Floor)
- Vertical conveyor knock-out slabs
- Relocated fan room on (35th Floor)
- Relocated air shafts (Floors 30-35)
- Relocated communications, electrical, telephone & plumbing risers (Floors 30-35)
- Supplemental floor framing to accommodate MER
- Louvers on west wall (35th Floor)
- Relocated toilet rooms (34th and 35th Floor)
- Raise elevator stops to accommodate raised flooring (Floors 30-35)
- Adjust exit stair to accommodate raised flooring
- Elevator transfer (34th Floor)
- Ground system for SBI technology equipment
- Ground convector to each telephone closet
- Sprinkler modification for core demolition

October 31, 1988 - Floors 36 thru 38, Floors 40 thru 44

- Reinforce structure at trading floors (100 p.s.f)
- Supplemental egress stair
- Electrical riser closets
- Communications risers
- Reinforce floors to accommodate raised flooring
- New elevator machine room/pit and stop Floors 43 and 44 (2 elevators)
- Vertical conveyor knock-out slab
- Relocated MER rooms
- Slab reinforcing for new MER's
- Relocated communications, electrical, telephone and plumbing risers
- Louvers on west wall (44th Floor)
- Relocated toilet rooms
- Raise elevator stops to accommodate raised flooring
- Adjust exit stairs to accommodate raised flooring
- Ground system for SBI technology equipment
- Ground system for telephone closet
- Sprinkler modification for core demolition
- Kitchen exhaust (41st and 37th Floors)

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BASE BUILDING MODIFICATION OCTOBER 3, 1988

SUBMITTAL PACKAGE TO BE DELIVERED TO PORT AUTHORITY OF NY/NJ FOR APPROVAL

November 21, 1988 - Floors 45 thru 47 and 39

- Supplemental egress stair (Floors 39 and 45)
- Microwave riser shaft (44th Floor to Roof)
- Kitchen exhaust (45th Floor)
- (2) electrical riser closets
- Communication risers
- Structural reinforcement for cafeteria and dining (45th Floor)
- Reinforce floors to accommodate raised flooring
- Slab removal and reinforcing for auditorium (39th Floor)
- (2) elevators (Floors 43-47)
- Vertical conveyor knock-out slab
- Relocated MER's
- Reinforce structure to support new MER's
- Louvers at west wall (47th Floor)
- Relocated toilet rooms
- New toilet rooms (46th and 47th Floor)
- Raise elevator stops to accommodate raised floor
- Adjust exit stairs to accommodate raised floor
- Gas service at 45th Floor
- Ground system for SBI technology equipment
- Ground conductor for telephone closets
- Sprinkler modification for core demolition

December 19, 1988 - Floors 1 thru 5 and Roof

- Reinforce roof to support microwave equipment
- Kitchen exhaust (45th Floor)
- Electrical riser closets
- Communications shafts
- Structural reinforcing for cafeteria (4th Floor)
- Escalators between 3rd and 4th Floors
- Diesel fuel riser
- Supplemental egress stairs (2nd Floor auditorium 4th Floor dining)
- New penthouse
- New toilet rooms (3rd and 4th Floors)
- Mechanical systems outstanding (all floors)
  - Active and standby cooling towers
  - Active and standby water pumps
  - Chilled water plant
  - Chilled water pumps
  - Looped chilled water risers
  - New and relocated DX units
- Diesel fuel tank (1st Floor)
- Additional metered water service entry
- Gas service (4th Floor)
- New NY Telephone service entry
- Bus ducts as required
- Diesel generators
- UPS systems
- Dedicated area for visitor reception (1st Floor)
- Dedicated wet waste area (1st Floor)
- Secure area for sensitive documents

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
OCT 19 1988
W-7004
ALTERATION APPLICATION

(2)

SALOMON BROTHERS INC. 7 WORLD TRADE CENTER

2ND FLOOR AUDITORIUM CODE ANALYSIS - PLACE OF ASSEMBLY

POPULATION : 264 auditorium.

OCCUPANCY: F-1B

TRAVEL DISTANCES (TABLE 8-1)
-Maximum primary travel distance from seat to Safe Area: 100 feet
-Maximum secondary travel distance : 125 feet
-Minimun separation of exits : 25 feet

NUMBER OF PERSONS PER UNIT OF WIDTH (22")
-Aisles and cross aisles : 90 persons
-Exit doors from assembly space : 80 persons
-Exit doors from safe area : 125 persons
-Safe areas, corridors and exit passageways : 125 persons
-Minimun width of corridors : 44 inches

EXIT OPENINGS
-If net floor area, excluding stage area, is twelve (12) sq. ft. or more per person, exit from assembly space may be provided by exit openings of any class.
-If net floor area, excluding stage area, is less than twelve sq. ft. per person, exit from assembly space must be CLASS 1 only.
CLASS 1 - Exit openings that are used for normal entry to the assembly space, and that open directly to a safe area or to an exterior space.
-WIDTH
-Single door - 44" min.
-Double door - 36" min., 88" max.

EGRESS
-Existing stairs have capacity of 150 persons each that exit to safe area on the third floor. One stair has a capacity of 120 persons and exits directly to street. TOTAL EXIT CAPACITY : 420 PERSONS.

SAFE AREAS :
-Serve as a transition space in the line and direction of exit travel.
-Serve as normal entry to the assembly space and may be used as corridors, lobbies and lounges.
-Separation from other spaces by a two hour fire-resistance rating.
-OCCUPANT LOAD - aggregate occupant load of all openings discharging directly into it.
-DIMENSIONS - Two sq.ft. per person excluding furniture or equipment
- Minimum dimension of unobstructed space - 6 feet.
- Height - 8'-0" min.

SEATING
-If area is less than 12 sq.ft. per person, chairs must be attached.
-If area is between 8 and 12 sq.ft. per person, movable chairs may be used provided all chairs in a row are ganged. Not more than 12 chairs between aisles.

-All chairs placed on step, .d platforms less than 4'-0" wio shall be anchored.
-Minimum distance between centerlines of chairs in any row : 19"
-Spacing between the back of one chair in any row and any part of the chair behind it shall be at least 12' but is increased by the following reasons:

a) DIFFERENCE IN LEVEL (IN.) — INCREASE IN SPACE (IN.)

6-10	1"
11-16	2"
17-22	3"
23 +	4"

B) Where it is necessary to pass more than seven (7) chairs to reach the nearest aisle, spacing shall be increased by 1/4" for each chair in excess of seven (7).

-Not more than eight (8) chairs shall be provided in any row of seating having access to only one aisle.
-Performance viewing for wheelchair positions (Local Law 58)

CAPACITY	NUMBER OF POSITIONS
75-100	4 min.
101-150	5 min.
151-200	6 min.
201-300	7
301-400	8
401-500	9
500-1000	2% of total

AISLES SLOPES
-Maximum 1:8
-Steps
a) When single riser is used between levels, riser is 8" or less.
b) No riser may be less than 4"
c) When more than one (1) riser is used, riser is 7 3/4" or less
d) Width of treads is between 9 1/2" and 10 1/2" (excluding nosings).

* The safe area for the second floor auditorium begins on the 2nd floor and continues to the third floor, where it exits directly into the lobby. This configuration was designed by the base building architects and does not comply with all of the parameters of the New York City code defining Safe Areas. Also, the 3rd floor lobby, technically an atrium, is considered to be a lobby providing direct access to grade.

SALOMON BROTHERS INC. 7 WORLD TRADE CENTER

4TH FLOOR DINING CODE ANALYSIS

POPULATION : 450 (400 dining + 50 misc.)

OCCUPANCY: F-4

TRAVEL DISTANCES (TABLE 8-1)
-Maximum primary travel distance from seat to Safe Area: 127 feet*
-Maximum secondary travel distance : 187 feet*
-Minimun separation of exits : 25 feet
*distance has been increased by 50% in fully sprinklered bldg.
-When travel paths have more than two segments, travel distances shall be computed by the following:
1st and 2nd segments - measured distance
3rd segment - 1.25 times measured distance
4th segment - 1.40 times measured distance
5 or more segments - 1.25 times length of segments

- NUMBER OF PERSONS PER UNIT OF WIDTH (22")
-Aisles and cross aisles : 80 persons
-Exit doors from assembly space : 50 persons
-Exit doors from safe area : 100 persons
-Safe areas, corridors and exit passageways : 80 persons
-Minimun width of corridors : 44 inches

EXIT OPENINGS
-If net floor area, is twelve (12) sq. ft. or more per person, exit from assembly space may be provided by exit openings of any class.
-If net floor area, is less than twelve sq. ft. per person, exit from assembly space must be CLASS 1 only.
CLASS 1 - Exit openings that are used for normal entry to the assembly space, and that open directly to a safe area or to an exterior space.
-WIDTH
-Single door - 44" min. (36" min. if population is below 300)
-Double door - 36" min., 88" max.

EGRESS
-Existing stairs have capacity of 150 persons each (total 300).
(distance and layout may create problems in using both stairs.)
SAFE AREAS
-Serve as a transition space in the line and direction of exit travel.
-Serve as normal entry to the assembly space and may be used as corridors, lobbies and lounges.
-Separation from other spaces by a two hour fire-resistance rating.
-OCCUPANT LOAD - aggregate occupant load of all openings discharging directly into it.
-DIMENSIONS - Two sq.ft. per person (excluding furniture or equipment)
- Minimum dimension of unobstructed space - 8 feet.
- Height - 8'-0" min.

SEATING
-Table and Chair Seating:
Maximum distance of path between tables from any chair to an aisle leading to an exit is 18'-0".
The width of the path shall be at least 18" but may be reduced by 1" for each foot that the distance of the aisle is less than 18'-0" (min. width is 12").
Chairs with the front edge of the chair in line with the edge of the table shall not protrude into the path.

SUMMARY:
Egress has been accomplished by the addition of a supplemental stair with a capacity of 150 persons (exiting directly to lobby) and the use o a horizontal exit. TOTAL EXIT CAPACITY FROM DINING AREA: PERSONS.

SALOMON BROTHERS INC. 7 WORLD TRADE CENTER

39TH FLOOR AUDITORIUM CODE ANALYSIS - PLACE OF ASSEMBLY

POPULATION : 400 (300 auditorium + 100 misc.)

OCCUPANCY: F-1B

TRAVEL DISTANCES (TABLE 8-1)

-Maximum primary travel distance from seat to Safe Area	: 100 feet
-Maximum secondary travel distance	: 125 feet
-Minimun separation of exits	: 25 feet

NUMBER OF PERSONS PER UNIT OF WIDTH (22")

-Aisles and cross aisles	: 90 persons
-Exit doors from assembly space	: 80 persons
-Exit doors from safe area	: 125 persons
-Safe areas, corridors and exit passageways	: 125 persons
-Minimun width of corridors	: 44 inches

EXIT OPENINGS

-If net floor area, excluding stage area, is twelve (12) sq. ft. or more per person, exit from assembly space may be provided by exit openings of any class.

-If net floor area, excluding stage area, is less than twelve sq. ft. per person, exit from assembly space must be CLASS 1 only.

CLASS 1 - Exit openings that are used for normal entry to the assembly space, and that open directly to a safe area or to an exterior space.

-WIDTH

-Single door - 44" min.

-Double door - 36" min., 88" max.

EGRESS

-Existing stairs have capacity of 150 persons each (total 300).

SAFE AREAS

-Serve as a transition space in the line and direction of exit travel.

-Serve as normal entry to the assembly space and may be used as corridors, lobbies and lounges.

-Separation from other spaces by a two hour fire-resistance rating.

-OCCUPANT LOAD - aggregate occupant load of all opeings discharging directly into it.

-DIMENSIONS - Two sq.ft. per person (excluding furniture or equipment)
- Minimum dimension of unobstructed space - 8 feet.
- Height - 8'-0" min.

SEATING

-If area is less than 12 sq.ft. per person, chairs must be attached.

-If area is between 8 and 12 sq.ft. per person, movable chairs may be used provided all chairs in a row are ganged. Not more than 12 chairs between aisles.

-All chairs placed on stepped platforms less than 4'-0" wide shall be anchored.

-Minimum distance between centerlines of chairs in any row : 19"

-Spacing between the back o. one chair in any row and any pa c of the chair behind it shall be at least 12' but is increased by the following reasons:

a) DIFFERENCE IN LEVEL (IN.) — INCREASE IN SPACE (IN.)

6-10	1"
11-16	2"
17-22	3"
23 +	4"

B) Where it is necessary to pass more than seven (7) chairs to reach the nearest aisle, spacing shall be increased by 1/4" for each chair in excess of seven (7).

-Not more than eight (8) chairs shall be provided in any row of seating having access to only one aisle.

-Performance viewing for wheelchair positions (Local Law 58)

CAPACITY	NUMBER OF POSITIONS
75-100	4 min.
101-150	5 min.
151-200	6 min.
201-300	7
301-400	8
401-500	9
500-1000	2% of total

AISLES SLOPES

-Maximum 1:8

-Steps

a) When single riser is used between levels, riser is 8" or less.
b) No riser may be less than 4"
c) When more than one (1) riser is used, riser is 7 3/4" or less
d) Width of treads is between 9 1/2" and 10 1/2" (excluding nosings).

027E SALOMON BROTHERS INC
BASE BUILDING MODIFICATIONS STATUS

SKIDMORE, OWINGS & MERRILL
SEPTEMBER 15,1988

NO.	ITEM	CONSULTANTS INVOLVED	SBI APPROVAL	INFORMATION TO SOM	SOM ISSUES DOCUMENTS TO CONSULTANTS	CONSULTANTS ISSUE DOCUMENTS TO SOM	SOM ISSUES DOCUMENTS FOR REVIEW
1	Remove slab & reinforce existing structure at trading floors (100 lbs. per square foot floor loading).	OIGC			9/1/88		9/15/88
2	Cut slab, reinforce as required and install new stairs at floors 35 through 45.	OIGC			9/19/88		10/24/88
3	Reinforce roof as required to support microwave equipment (125 mph wind load).	OIGC, ESA		9/9/88	10/15/88		11/28/88
4	Provide two (2) microwave riser shafts microwave room -One (1) shaft to 44th floor -One (1) shaft to 35th floor	OIGC, ESA			9/1/88		
5	Add shaft for kitchen exhaust - Roto-clone vent thru building face at floor 4 or 5 - Shaft from 45th floor to roof - Shaft from 41st floor to roof - Shaft from 37th floor "quick-stop"	OIGC, F+K FORMA		9/9/88	9/19/88		10/24/88
6	Provide two (2) new electrical riser closets on all SBI floors. Reinforce slab opening as required.	OIGC, F+K			9/19/88		10/24/88
7	Provide two (2) new electrical shafts from point of entry to lowest SBI floor.	OIGC, F+K			9/19/88		10/24/88
8	Create eight (8) separate communications riser shafts - (2) to serve the trading & technology floors (35 thru 44) - (2) from point of service entry at street to the 47th Fl. - (2) to serve the support office floors (30-47) - (2) to serve lowest SBI floors (1-5) from 35th floor	OIGC, F+K			9/19/88		10/24/88
9	Provide additional floor reinforcement for special spaces - Cafeteria (4th Fl.) - Libraries - Cafeteria and dining (45th Fl.) - Data center (34th fl.)	OIGC FORMA	9/8/88		9/19/88 9/21/88 10/30/88 10/30/88		10/31/88 12/12/88 12/12/88
10	Reinforce typical floors to accept 6" raised floor and MEP and technology requirements.	OIGC			9/9/88		
11	Remove slab and reinforce structure for auditorium (39th fl) for double height space.	OIGC reinf.			9/1/88 10/15/88		9/15/88 12/12/88
12	Provide air shaft transfer 35th floor.	OIGC, F+K			9/1/88 9/19/88		10/24/88

OIGC = The Office of Irwin G. Cantor, P.C.
F+K = Flack + Kurtz
ESA = Electronic Systems Associates
JAVDA = John A. Van Deusen & Associates
FORMA = FORMA

SALOMON BROTHERS INC
BASE BUILDING MODIFICATIONS STATUS

SKIDMORE, OWINGS & MERRILL
SEPTEMBER 15,1988

NO.	ITEM	CONSULTANTS INVOLVED	SBI APPROVAL	INFORMATION TO SOM	SOM ISSUES DOCUMENTS TO CONSULTANTS	CONSULTANTS ISSUE DOCUMENTS TO SOM	SOM ISSUES DOCUMENTS FOR REVIEW
13	Furnish and install two (2) 32" wide escalators to serve 4th Floor from the main elevator lobby (3rd Fl.). Modify slab and reinforce structure as required.	OIGC, JAVDA			9/12/88 9/19/88 OIGC		12/12/88 10/31/88
14	Provide (2) elevators between floors 44 & 47 Modify slab and reinforce structure as required.	OIGC, JAVDA		9/7/88	9/19/88		10/31/88
15	Provide one selective vertical conveyor system serving all SBI floors. Modify and reinforce slab as required.	OIGC, JAVDA		9/7/88	9/12/88 9/19/88 OIGC		12/12/88 10/31/88
16	Provide a concrete encased diesel fuel riser from the new SBI fuel tank to the new day tank on the 5th Floor.	OIGC, F+K		9/9/88	11/7/88		11/24/88
17	Remove fan rooms at trading, mezzanine and technology floors (floors 35 thru 44). Reinforce slab ass required to support new fan rms. Remove fan rms. from flrs. 45, 46 & 47.	OIGC, F+K			9/6/88		10/31/88
18	Relocate/transfer communications, electrical & telephone risers and plumbing and air shafts on floors 35 thru roof.	OIGC, F+K ESA			9/19/88		10/24/88
19	Provide 10,000 sq. ft. of supplemental floor framing reinforcement to accommodate increased loading by MEP equipment. (Location & weights to be determined by F+K)	OIGC, F+K			9/19/88		10/31/88
20	Furnish and install louvers at exterior wall - north side of 5th Floor. (As required by HVAC).	F+K			9/6/88		12/1/88
21	Furnish and install louvers at other floors as required by HVAC.	F+K			9/6/88		12/1/88
22	Relocate toilet rooms on trading, mezzanine and technology floors (35 thru 44).	F+K			9/6/88		12/1/88
	Add exit stairs as required for egress from special function areas (2nd floor auditorium, 4th floor dining)	OIGC			9/19/88		10/24/88

SALOMON BROTHERS INC
BASE BUILDING MODIFICATIONS STATUS

SKIDMORE, OWINGS & MERRILL
SEPTEMBER 15,1988

NO.	ITEM	CONSULTANTS INVOLVED	SBI APPROVAL	INFORMATION TO SOM	SOM ISSUES DOCUMENTS TO CONSULTANTS	CONSULTANTS ISSUE DOCUMENTS TO SOM	SOM ISSUES DOCUMENTS FOR REVIEW
24	Extend penthouse to accommodate MEP and communication requirements.	OIGC, F+K ESA			9/19/88		12/19/88
25	Add toilet rooms on Floors 3, 4, 46 and 47.	F+K					
26	Adjust existing toilet rooms as required to meet tenant program.	F+K					12/1/88
27	Raise elevator sills and frame to accommodate 6" raised floor.	JAVDA					12/1/88
1	Adjust exit stairs to suit 6" raised floor.						11/7/88
29	Provide new stops on the high rise elevator group for the 34th floor.	JAVDA					12/1/88
30	Modify the existing elevator controls to: -Extend the high rise service down to the 34th floor -Provide cross over service on the 34th floor -Arrange controls to provide restricted service to 4th floor.	JAVDA					12/1/88
31	Provide (8) active and (1) standby cooling tower cells at 550 tons each located at the roof of the building to accommodate the special tenant supplemental air conditioning requirements.	F+K					12/19/88
32	Provide (4) active and one standby condenser water pumps (total of 5 pumps). Each pump sized to pump (3) GPM per ton 3,300 GPM total.	F+K					12/19/88
33	Provide 5,500 ton chilled water plant consisting of four (4) active 1,100 ton units and one (1) 1,100 ton standby unit.	F+K					12/19/88
34	Provide four (4) active and one (1) standby chilled water pump (total 5 pumps). Each pump sized to pump 2.4 GPM per ton (2,640 GPM total).	F+K					12/19/88

SALOMON BROTHERS INC
BASE BUILDING MODIFICATIONS STATUS

SKIDMORE, OWINGS & MERRILL
SEPTEMBER 15,1988

NO.	ITEM	CONSULTANTS INVOLVED	SBI APPROVAL	INFORMATION TO SOM	SOM ISSUES DOCUMENTS TO CONSULTANTS	CONSULTANTS ISSUE DOCUMENTS TO SOM	SOM ISSUES DOCUMENTS FOR REVIEW
35	Provide separate looped chilled water risers.	F+K				9/15/88	11/7/88
36	Provide positive pressure supply unit at roof to outside air ventilation shafts serving SBI spaces. The upper ventilation shaft will be an insulated sheet metal duct in the ventilation shaft.	F+K				9/15/88	11/7/88
37	Provide a new 12,000 gallon diesel fuel tank for SBI's standby generators.	F+K				9/15/88	12/19/88
38	Replace the existing 275 gallon diesel fuel day tank on the 5th floor with a 125 gallon tank for the building emergency generators and a 125 gallon diesel fuel tank for the SBI stand by generators.	F+K				9/15/88	12/19/88
39	Provide additional building metered water service entry.	F+K				9/15/88	12/19/88
40	Provide gas service for kitchen use: - at 4th floor - at 45th floor - at 41st floor	F+K				9/15/88	11/7/88
41	Provide cooling tower emergency make up water capabilities, either storage tanks and separate pumped fill system and/or tanker truck access with outside wall hydrant connections on two separate streets.	F+K				9/15/88	11/7/88

SALOMON BROTHERS INC
BASE BUILDING MODIFICATIONS STATUS

SKIDMORE, OWINGS & MERRILL
SEPTEMBER 15,1988

NO.	ITEM	CONSULTANTS INVOLVED	SBI APPROVAL	INFORMATION TO SOM	SOM ISSUES DOCUMENTS TO CONSULTANTS	CONSULTANTS ISSUE DOCUMENTS TO SOM	SOM ISSUES DOCUMENTS FOR REVIEW
42	The mezzanine space above the trading floor level and the area below on the trading floor located directly below the mezzanine will each be served by one (1) relocated DX air conditioning unit. levels.	F+K				9/15/88	12/5/88
43	Provide two (2) 45 ton local floor units of the direct expansion type for each non-trading floor except the technology floors. These units shall be served from the base building condenser water system.	F+K				9/15/88	12/5/88
44	Provide relocated, direct expansion units on 47th floor to serve 46th and 45th floors.	F+K				9/15/88	12/5/88

SALOMON BROTHERS INC
BASE BUILDING MODIFICATIONS STATUS

SKIDMORE, OWINGS & MERRILL
SEPTEMBER 15,1988

NO.	ITEM	CONSULTANTS INVOLVED	SBI APPROVAL	INFORMATION TO SOM	SOM ISSUES DOCUMENTS TO CONSULTANTS	CONSULTANTS ISSUE DOCUMENTS TO SOM	SOM ISSUES DOCUMENTS FOR REVIEW
45	Provide a minimum additional service of four 2,500 KVA transformers on the north side of the 5th floor.	F+K		9/7/88			12/5/88
46	Provide high voltage switchgear, transformers and four 5,000 A service switchboards.	F+K		9/15/88			12/5/88
47	Provide a separate incoming New York Telephone service entrance riser which shall terminate in each of the VTA's. Incoming service to each VTA shall be enclosed in six 5" continuous conduits. The riser conduits shall be enclosed by a 2-hour fire rated wall for its full vertical run. -Entry needed on Washington St. side for (6) 5" conduits.	ESA		9/7/88			
48	Provide a total of 16,000 AMP copper bus duct divided into four(4) risers for supplemental power to SBI equipment loads.	F+K		9/7/88			11/7/88
49	Provide a total of 7,000 AMP copper bus duct risers for SBI mechanical equipment loads.	F+K		9/7/88			11/7/88
50	Route the incoming New York Telephone service through protected conduits and riser shafts to vendor termination areas. The risers shall be vertical with no offset from lowest level to each VTA.	ESA		9/7/88			
51	Provide a minimum of seven (7) 1400 KVA diesel generators and space for three (3) future generators on the 5th floor north complete with paralleling switchgear and distribution. Switchgear to be located in the "UPS" room on the 5th floor west.	F+K		9/7/88			12/5/88
52	Provide a separate ground system for SBI technology equipment.	ESA		9/7/88			
	Provide 500 MCM ground conductor for each electrical closet.	F+K				9/15/88	11/7/88
54	Furnish and install #6 ground conductor to each telephone closet.	ESA				9/15/88	

SALOMON BROTHERS INC
BASE BUILDING MODIFICATIONS STATUS

SKIDMORE, OWINGS & MERRILL
SEPTEMBER 15,1988

NO.	ITEM	CONSULTANTS INVOLVED	SBI APPROVAL	INFORMATION TO SOM	SOM ISSUES DOCUMENTS TO CONSULTANTS	CONSULTANTS ISSUE DOCUMENTS TO SOM	SOM ISSUES DOCUMENTS FOR REVIEW
55	Provide a minimum of five (5) UPS systems (4) at 2,500 KVA and (1) at 400 KVA in tenant space. Reinforce structure as required.	F+K				9/15/88	12/5/88
56	Provide dedicated area at lobby level for visitor reception and security screening - including installation of security devices and repair of existing finishes.	F+K				9/15/88	
57	Provide dedicated area for refrigerated wet waste.	F+K				9/15/88	
58	Provide secure area for receiving sensitive materials.					9/15/88	
59	Sprinkler modification for core demolition - NYC Code	F+K				9/15/88	11/7/88
60	Modifications to facilitate construction.	M/D		9/9/88			
	*DATES ARE PREDICATED ON THE APPROVAL BY 9/19/88 OF THE BASE BUILDING MODIFICAION DOCUMENTS ISSUED 9/15/88						

THE PORT AUTHORITY OF NEW YORK & NEW JERSEY

M E M O R A N D U M

To: Mr. R. Linn, Deputy Director for Physical Facilities, WT&ED
From: Arthur P. Coras
Date: October 17, 1988
Subject: WTC - ALTERATION APPLICATION #W-7004 - SALOMON BROTHERS - 7 WTC - ELECTRICAL, HVAC AND PLUMBING DEMOLITION FLOORS 38, 40, 42

Reference: Review Request dated 10/11/88

Copy To: L. Sanchez A. Vaccaro Job Folder
Chrono Folder

A review of the material submitted with the referenced request for the subject application has been made.

It is recommended that approval be given based on the items listed below.

There are no comments.

Drawings: D-38E, D-1E, D-38H, D-1P, and D-2P, all revised 10/5/88, are recommended for approval for demolition.

REMARKS: This submission was revieved for demolition only.

Arthur P. Coras, P.E.
Manager
Quality Assurance Division

AR/dm

THE PORT AUTHORITY OF NY & NJ Memorandum

To Mr. Arthur Coras, Manager, Quality Assurance Division
From. Luciano Sanchez
Date:
Subject THE WORLD TRADE CENTER - SALOMON BROTHERS INC. - LEASE WT-2305 - TCA #7004 - CONTRACT WTC 597.004 - REVIEW OF CONTRACT DRAWINGS - DEMOLITION OF FLOORS 39, 41, AND 43
Reference: Transmittal of drawings, dated October 6, 1988

Refer To	Date	Noted By	Date
Return To		File	

Copy To: Messrs. T. Cancelliere, P. Cooper, E. Daly, T. Donovan, J. Duncan, M. Glavicic, R. Linn, E. McNierney, A. Vaccaro

You are requested to review the drawings delivered to your office on October 11, 1988 for New York City Building Code compliance, construction details and specifications, as they apply to 7 World Trade Center.

This work will be performed under a Tenant Construction Application and consist of demolition of Electrical, Plumbing and HVAC work associated with floors 39, 41, and 43, to the subject premises. The estimate cost for this work is $2,000,000.00.

In addition, all persons copied with attachments of this memorandum are also requested to submit their comments by October 19, 1988.

Should you have any questions on this matter please contact me on 466-8566 or Mr E. McNierney on 313-2257.

Luciano Sanchez
WTC Planning Division

E.McN/kj
Attach.

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
OCT 18 1988 (1)
W-7004
ALTERATION APPLICATION

PA 90A
3-80

A 2127
1-85

TENANT ALTERATION REVIEW REQUEST

✓	CHECK APPLICABLE ROUTING	ROOM NO.
✓	Engineering (C.A.D.) (W13)	51E
✓	R. LINN - WTC ED DEP. DIR. Phys.	63W
✓	P. MARCHESE - WT PLNG DIV.	62E
✓	L. SANCHEZ " " "	62E
	Control Desk " " " (W1)	62E
	~~J. CHENNISI~~ " " "	~~62E~~
	~~E. Daly~~ " " "	~~62E~~
	~~M. GLAVIANO~~ " " " (W1)	62E
	C. SOMAH " " " (W1)	62E
	~~C. SPECE WT CONST DIV. (W1)~~	38N
	F. BOYCE WT OPER. (W1)	63N
	T. CANCELLIERE WT OPER. (W1)	B2B
	Inspection & Safety (Eng. Audit) (W1)	#41
	~~R. BENACCHIO WT OPER~~	
	A. VACCARO WT CONST DIV.	38N
	~~G. WENGER DEPUTY REP. DIV.~~	~~63S~~
	M. SINGLETON WT PLNG. DIV.	62E
	CENTRAL FILE	
	N. CHAMFRAU RISK MGMT (W1)	#43

Description of Work:

PLUMBING, ELECT., MECH., HVAC DEMOLITION

FACILITY: 7 WTC
APPLICANT'S NAME: SALOMIN BRO
APPLICATION NO.: TCA 7004
DRAWING NO(S).: X SEE ATTACHED LIST
CONTRACT NO.: WTC 597.004
DATE: 10, 11, 88

☑ You are requested to review the attached application and forward your comments to: L. SANCH

☐ Attached are revised drawings. Please review only those items on which exception was previously take and send your comments to:

Org. Unit	Room No.	Contact	Ext.
829	62E	L. SANCHEZ	466-8566

No later than: OCT. 19, 1988

Title:

If no reply is received by above date, your concurrence will be assumed unless arrangements have been made for additional time for review.

FOR USE OF REVIEWING DEPARTMENT

COMMENTS: (Use reverse side if necessary) Indicate next to each comment whether it is a condition or recommendation.

* DRAWING NOS.	TITLE	REV.	DATE
D. 38 E	38TH FLR. DEMO. PLAN	1	10/5/8
D-1E	ELECTRICAL RISER	1	"
D-38H	HVAC PLAN	1	"
D-1P	PLUMBING	1	"
D-2P	RISER DIAGRAMS	1	"

(* check applicable box)

NOTE: LETTER LINN TO CORAS TO FOLLOW.

☐ Approved ☐ Approved with Conditions and Recommendations Noted Above ☐ Disapproved with Requirements for Approval Noted Above ☐ Disapproved for Reasons Noted Above

Signature	Title	Date
		/ /

H. Mac Donald

TENANT ALTERATIONS REVIEW REQUEST

DATE Oct. 13, 1988

Application Number: W-7004

Submission : #1

Return Date : EXPEDITE !

Coordinator : ROHSSLER

Facility : WTC

Tenant : Salomon Brothers

Charge Number : W2-405-083-200.447

Building Code : N.Y.C.

Full Set given. Review as per agreement with Paul Cooper. JPV is sick.

Trade(s) : Arch , Struct , Elect , HVAC , (Plumb) , Civil , Soils , Sprink , Fire Protection , Fueling , Other .

Submission : (Plans) , Specs , Previous Rider , Response to Rider , _____

Notes 1. Please let us know the date by which you plan to return your comments, if different from date shown above, in order for us to inform the facility.

2. In order to save time, please write your comments in a form that will not need re-writing by TCRU.

	Plumbing	Sprinkler	Fire Protect.	Fueling	Elect.	Soils	Civil	Other
Reviewer	H.MacD							
Date started	10/5/88							
Date completed	10/5/88							
Review time	1/2							
New Comments Code/Non-Code	— / —							
Repeat Comments Code/Non-Code	— / —							
Staff Concurrence								

2127
-85

10/12

TENANT ALTERATION REVIEW REQUEST

CHECK APPLICABLE ROUTING	ROOM NO.
Engineering (Q.A.D.) (W/3)	51E
R. LINN - WT & FD DEP. DIR. PHYS.	63W
P. MARCHESE - WT PLNG DIV. FAC.	62E
L. SANCHEZ " " "	62E
Control Desk " " " (W/1)	62E
~~J. CHENNISI " " "~~	~~62E~~
~~E. DALY " " "~~	~~62E~~
~~M. GLAVICIC " " " (W/1)~~	~~62E~~
C. SOMAH " " " (W/1)	62E
~~C. SERGE WT CONST DIV. (W/1)~~	38N
F. BOYCE WT OPER. (W/1)	63N
T. CANCELLIERE WT OPER. (W/1)	B2B
Inspection & Safety (ENG. AUDIT) (W/1)	#41
~~R. BENACCHIO WT OPER~~	
A. VACCARO WT CONST DIV.	38N
~~G. WENGER DEVELOPMENT DIV.~~	~~63S~~
M. SINGLETON WT PLNG. DIV.	62E
CENTRAL FILE	
N. CHAMFRAU RISK MAGNETIC DIV. (W/1)	#43

Description of Work:

PLUMBING, ELECT., MECH., HVAC W DEMOLITION

FACILITY: 7 WTC

APPLICANT'S NAME: SALOMON BROS

APPLICATION NO.: ~~TCA~~-7004

DRAWING NO(S): * SEE ATTACHED LIST

CONTRACT NO.: WTC 597.004

DATE: 10 / 11 / 88

☑ You are requested to review the attached application and forward your comments to: L. SANCHEZ

☐ Attached are revised drawings. Please review only those items on which exception was previously taken and send your comments to:

829	62E	L. SANCHEZ	466-8566
Org. Unit	Room No.	Contact	Ext.

No later than OCT. 19, 1988

Title

If no reply is received by above date, your concurrence will be assumed unless arrangements have been made for additional time for review.

FOR USE OF REVIEWING DEPARTMENT

COMMENTS: (Use reverse side if necessary) Indicate next to each comment whether it is a condition or recommendation.

* DRAWING NOS.	TITLE	REV.	DATE
D.38E	38th FLR. DEMO. PLAN	1	10/5/88
D-1E	ELECTRICAL RISER	1	"
D-38H	HVAC PLAN	1	"
D-1P	PLUMBING	1	"
D-2P	RISER DIAGRAMS	1	"

THE PORT AUTHORITY OF N.Y. & N.J.
TENANT CONSTRUCTION REVIEW UNIT
RECEIVED
OCT 12 1988
W-7004
ALTERATION APPLICATION

(1)

NOTE: LETTER LINN TO CORAS TO FOLLOW.

(Check applicable box)

☐ Approved with Conditions and Recommendations Noted Above ☐ Disapproved with Requirements for Approval Noted Above ☐ Disapproved for Reasons Noted Above

Signature | Title | Date / /

THE PORT AUTHORITY OF NY & NJ Memorandum

To: Mr. Arthur Coras, Manager, Quality Assurance Division
From: Robert J. Linn
Date: September 30, 1988
Subject: THE WORLD TRADE CENTER - SALOMON BROTHERS INC. - LEASE WT-2305 - TCA #7004 - CONTRACT WTC 597.004 - REVIEW OF CONTRACT DRAWINGS - DEMOLITION OF FLOORS 39, 41, AND 43
Reference: Transmittal of drawings, dated 9/28/88.
Copy To:

Refer To	Date	Noted By	Date
Return To		File	

Messrs. T. Cancelliere, P. Cooper, E. Daly, J. Duncan, T. Donovan, M. Glavicic, S. Johnson, E. McNierney, L. Sanchez, A. Vaccaro

You are requested to review the attached drawings (see Drawing List) for New York City Building Code compliance, construction details and specifications, as they apply to 7 World Trade Center.

This work will be performed under a Tenant Construction Application and consist of demolition of partial areas of floors 39, 41, and 43, to the subject premises. The estimated cost for this work is $2,000,000.00.

In addition, all persons copied with attachments of this memorandum are also requested to submit their comments by October 12, 1988.

Should you have any questions on this matter please contact Mr. L. Sanchez on 466-8566 or Mr. E. McNierney on 313-2257.

Dwgs Hand Delivered to Engr 9/29.

Robert J. Linn 10/3/88
Deputy Director for
Physical Facilities
World Trade & Economic Development

E.McN/kj
Attach.

COPY TO	
APC	
LL	
PC	✓
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THE PORT AUTHORITY OF NY & NJ
QUALITY ASSURANCE DIV.
ENGINEERING DEPT.
OCT 06 1988
RECEIVED
NOTED:
REFERRED TO:

PA 90A
3-80